THE IRON AGE

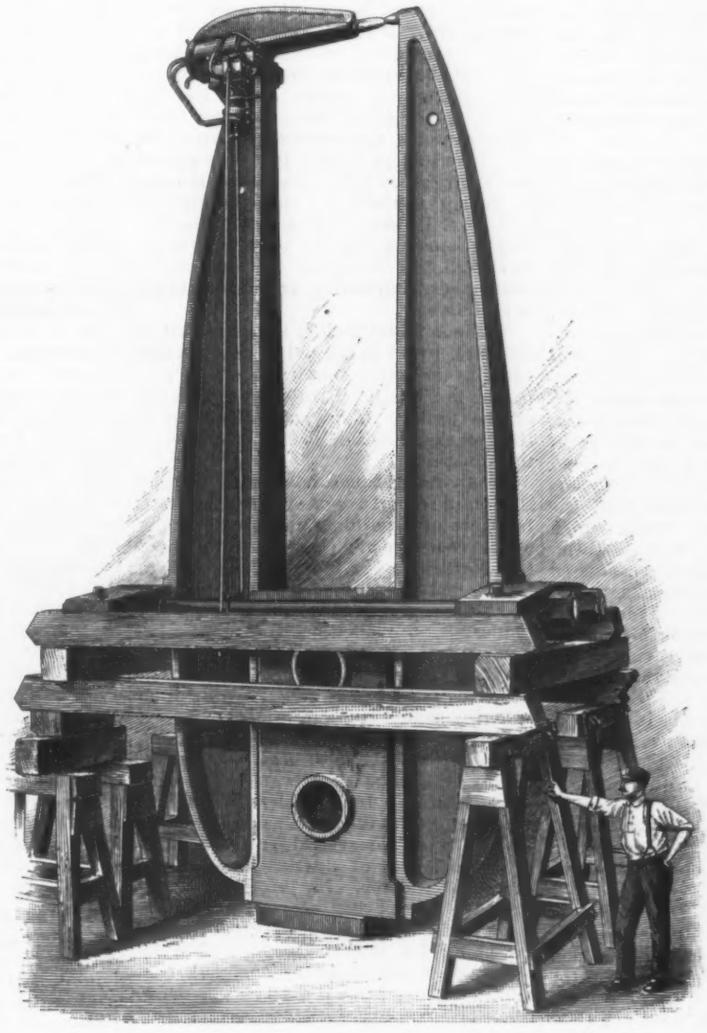
THURSDAY, DECEMBER 3, 1891.

Mammoth Hydraulic Riveting Machine.

The riveting machine shown in the accompanying engraving was designed and built by William Sellers & Co., (Incorporated), for the Baldwin Locomotive Works, both of Philadelphia. It has a gap of 198 inches measured from the center of the riveting dies to the base of the throat, and the distance between the frames or stakes is 4 feet 6 inches. The ram is operated by hydraulic pressure and is capable of exerting variable pressures of 25, 50 or 75 tons upon the rivet, at the will of the operator, from a fixed accumulator pressure of 2000 pounds per square inch. These variations are obtained directly at the machine itself by a valve of special construction and by the simple movement of a single lever conveniently located. The stakes are of cast steel, and the requisite spread is obtained by means of the massive cast-iron box at the base, the whole being securely tied together by the large through bolts shown. The cylinder is also of cast steel and has cast with it the bearing for the riveting ram, which bearing is necessarily prolonged by the large overreach. Special care was observed to insure easy accessibility of all the packings, so that the repacking of any of the valves can be accomplished in the shortest possible time. The machine, instead of being placed in a pit, as is frequently the case, so as to make the floor line form the working platform, is set with the bottom of the throat level with the shop floor, and a platform (not shown) is attached to the main stake so as to bring the operators at the most convenient distance to the dies. The rivet heating furnace is carried upon this platform and to it are led the chains for racking the boiler in two directions. The hoisting machinery, which was also furnished by Wm. Sellers & Co. (Incorporated), has a capacity of 10 tons, and consists of a vertical hydraulic plunger with multiplying sheaves, located back of the riveting machine, from whence the chain is carried over sheaves to a crane carriage upon a swiveling wrought iron jib with a radius of about 25 feet. The valve for controlling the hoist is placed upon the riveting machine next to the one for moving the ram, and the hoisting and lowering are thus under the direct and full control of the men at the dies.

The machine has met the fullest expectations of both the purchasers and the builders, and is, we believe, the largest riveting machine that has yet been produced for this class of work.

An inspection of this machine in operation in the boiler shop of the Baldwin Locomotive Works showed it to have been admirably designed for the work. The shell to be riveted was easily and quickly handled, and the riveting performed rapidly and without delay from any cause. The shell to be riveted was brought to the base of the machine, the chains depending from the crane carriage were attached and the shell lifted and finally lowered over the outer arm. Having been adjusted so as to bring the row of holes opposite the ram, the heated rivet is inserted, and the valve turned, when the ram is forced out. The platform upon which the men stand and from which all the various operations of the machine are controlled is about 3 feet below the center of the ram.



MAMMOTH HYDRAULIC RIVETING MACHINE, BUILT BY WM. SELLERS & CO. (INCORPORATED).

The Knights of Labor at Toledo instructed the General Executive Board to further the agitation in favor of "the enforcement of the law under which the charter of the New York Central Railway would be forfeited." Since the trouble that grew out of the alleged misconduct of Lee the Knights have had an account to settle.

Experiments With High-Tension Currents.

At the Frankfort Exhibition a number of very beautiful experiments were carried out by Siemens & Halske with alternating currents of high electromotive force. These were performed by Dr. Berliner, and excited the admiration of all who saw them. The region of alternate currents of great potential is almost unexplored, but the researches that have been made show that it is full of possibilities of which no one can yet form any accurate conception. At present, says *Engineering*, we are only on the verge of the subject, which is so encircled with practical difficulties that no systematic experimental inquiries have been made. The few phenomena which have been shown have been so brilliant, and withal so unexpected, that an intense curiosity has been evoked for further information, and many minds turned to the subject. While Siemens & Halske were delighting their friends with exhibitions reaching up to 20,000 volts Siemens Brothers of London had already pushed their experiments up to 45,000 volts, and had at the Naval Exhibition an apparatus capable of delivering a current of 2 ampères at this enormous pressure—that is, of dealing with the energy of 120 horse-power. For various reasons there have been very few demonstrations of the power of the apparatus, but it is intended that it shall form a prominent feature at the Crystal Palace Exhibition, where, doubtless, all who appreciate its importance will endeavor to see it.

It is almost impossible to convey by words any idea of the visible phenomena accompanying the efforts of a 40,000-volt current to bridge an open space, but we will attempt a description of what we saw one evening last week. Upon a table there was fixed an electrode, some 3 inches in diameter, connected to one terminal of a transformer. Over it there was mounted a large sheet of glass 3 mm. thick, and above the glass there was a second electrode terminating in a sharp point, the distance between the electrodes being 3 cm. When the current was turned on to the primary coil of the transformer there first appeared a purple haze at the upper electrode, streaming toward the glass. As the current increased this haze grew in fullness and definition and began to throw out feelers which darted outward, and as quickly withdrew. As the electromotive force augmented still further these feelers gathered power un-

til they beat themselves on the glass as if they would force themselves through it in their mad desire to reach the other electrode. The whole space below the pointed conductor became alive with them, and exhibited a mass of leaping, crackling threads of purple fire, which writhed and twisted in impotent attempts to burst through the barrier, and failing that, spread themselves along its surface, endeavoring to rush over its edges, and so reach their goal by a circuitous route. But this was beyond their strength until the electromotive force approached 45,000 volts, when suddenly the entire appearance was changed. The current overleaped the edges of the plate and flowed completely around it in all directions. At that moment the intense purple color of the spark disappeared, and was replaced by white light of the greatest brilliancy, which surged and scintillated in a way that produced acute fatigue of the eyes in an extraordinarily short time. Although steadier than before, the discharge still kept up its spark-like character, enfolding the glass plates in gleaming corruscations, which glistened and flashed until the spectators were fain to turn away their bedazzled gaze.

A change in the arrangement was then made. The upper pointed electrode was replaced by a brass disk 3 inches in diameter. This was laid over the surface of the glass plate with three very thin washers of vulcanite intervening between the two. The current was then turned on, in the same gradual manner as before. The space between the two disks immediately filled with purple light, which had sufficient motion in it to recall the flame of a Bunsen burner, spread out under the bottom of a beaker. Sparks then began to appear at the edges, and, as they gathered strength, to radiate a little beyond them. Gradually they became streamers stretching out along the surface of the plate, in curved fanciful forms, which twined and twisted and weaved themselves into a glistening filigree, compared by an imaginative spectator to an agonized Japananese chrysanthemum. This experiment had not the brilliant refulgence of the one that preceded it, but was characterized by a quivering irradiation which wreathed and tossed like a bird beating itself at the bars of its cage. In spite of its less formidable appearance, however, it proved destructive to the glass, which presently flew in pieces with a crash. Several sheets were tried in succession, but each was pierced and broken, and allowed the current to attain its object of flowing directly from one electrode to the other.

The last demonstration showed an arc under pressure of 44,000 volts. When the electrodes approached to within 5 inches the arc established itself, but instead of the flames bridging the space they streamed out in two thin tongues at right angles to the electrodes and parallel to each other. If the electrodes were pushed nearer together the flames deserted their extremities and wandered back along their stems, evidently repelling each other. The light produced was, of course, very small indeed.

In conclusion, we may add that the voltage was reached by two transformations. An 80-volt current was first raised to 2000 volts by one of Siemen's cable transformers, consisting of a long core of wire rope, composed of soft iron wires covered with a layer of specially prepared insulating material, around which are wound two insulated conductors, one forming the primary and the other the secondary circuit of the transformer. The secondary current was then raised to 45,000 volts by a transformer of the usual type.

The Sioux City Engine Works of Sioux City, Iowa, have opened a branch office at St. Louis, Mo., Room 319, Commercial Building, corner of Sixth and Olive streets. The office will be in charge of Mr. A. Morse, recently of the firm of English, Morse & Co., of Kansas City, Mo. The company are prepared to furnish on short notice Sioux City Corliss and Giddings' automatic engines with suitable boilers and make a specialty of complete steam plants for any service.

The Western Bituminous Coal Trade.

For a number of years past the Western bituminous coal trade has been in very unsatisfactory shape for the mine owners. The production of coal has been in excess of the demand, and the markets have been so glutted that the business has been one of the worst for either a capitalist or a workingman to be connected with. The bad condition of the trade has, of course, been intensified by the substitution of natural gas for fuel in important manufacturing sections. It is now claimed that the tide has turned and consumers are seeking favors at the hands of the mine owners. The Indiana coal miners' strike was the last thing needed to bring out the facts. It has caused a coal famine in a part of the West, consumers finding that they cannot so readily as of yore turn to other coal-producing sections for their bituminous fuel. W. P. Rend of Chicago, one of the largest operators in the country, was interviewed last week on the subject and made a very interesting statement, which is as follows:

While in Pittsburgh in the early part of the week I read in the public papers a dispatch to the effect that there was a coal famine in Chicago. This report I regarded at the time as highly sensational, or at least an exaggeration of the true facts of the situation.

On my return home, however, I find that this public report is not only true but falls far short of describing the great scarcity of soft coal here and elsewhere throughout the Northwest. Figuratively speaking, manufacturers, railroad purchasing agents and large coal consumers are begging and imploring on their bended knees the bewildered coal operator and coal dealer to let them have a supply of coal that will keep their industries and interests from suffering serious loss and injury.

Many of the appeals for coal are coming in the shape of the most urgent entreaties. On my desk there is now a stack of letters and dispatches from dealers at various places in several States clamoring for fuel. To illustrate their general tenor, I will repeat the words of distress from a coal dealer in Indiana. He cries: "For humanity's sake I beg of you to send me some coal. The people of my town are famishing for fuel." The tone of many other letters and telegrams is no less earnest. Railway general managers in many cases are sending dispatches urging forward fuel and expressing fears that unless shipments are increased at once their trains will be forced to stop. In fact, there is not bituminous coal enough at present to satisfy the enormous and phenomenal demand. The coal dealer is fairly at his wits' ends trying to care for the various large industrial and other interests requiring coal for their operation.

The production of coal is now greater than ever before in the history of the country, but great as it is the demand is much in excess of the output and of the means of transporting it to market. The causes of this condition of things are numerous and complex. The general scarcity of coal affects most of the Northwest, but in our local market this is greatly intensified by the strike in the coal regions of Indiana. A vast quantity of this coal is sold in Chicago. The late sudden strike in the extensive coal producing region of Brazil, Ind., shuts out the shipment of that coal from this market, and forces those who have been using it to purchase Illinois and other coal in its stead.

In Ohio and Western Pennsylvania there is now a home market for nearly all that can be produced in those sections, and little of this Eastern coal can be spared at present for the West. The failure of gas, or its greatly diminished supply, in Ohio, Pennsylvania and Indiana has forced its abandonment by manufacturers in Pittsburgh, and, in fact, almost every place in Pennsylvania, and in such places in Ohio as Dayton, Columbus and Springfield, and in Indianapolis and almost all the manufacturing towns of Indiana. The coal required to take the place of natural gas amounts to a vast tonnage. The stocks of coal in Cincinnati laid in last spring and summer from shipments down the Ohio and Kanawha rivers from Pennsylvania and West Virginia are about depleted and that city has not now a week's supply ahead. The Ohio River has been low for months, and no coal has been or can be floated down its stream to Cincinnati, Louisville and other places getting their supply in this way. The railroads everywhere are taxed to their utmost limit in moving the crops of the country and other merchandise required for general use.

This vast traffic requires vast quantities of coal for locomotive purposes. Cars for the transportation of coal are insufficient, and as a consequence almost every colliery in the country is unable to get the full complement of cars required to keep it in full operation or that will enable its operators to take care of orders pouring in upon them. There is in most places also a scarcity of miners. During the last two or three years comparatively few miners have come here from Great Britain or from the Continent of Europe. In England, Scotland and Wales during the period I have named the hours of labor have been reduced and rates of wages have been greatly increased. As a consequence the inducements offered to miners to immigrate to this country are not what they used to be, and the supply of skilled miners from abroad has of late grown less for the coal fields of this country.

There are other causes not necessary to particularize operating upon the coal situation and upon the coal mining industry affecting the supply and demand. I can add, however, that the prósperous condition of the country causes an increased consumption of coal as well as of other commodities for domestic and other uses. Suffice it to say, bituminous coal is now wanted, and wanted badly, and especially so in Chicago.

Making Machine Guns.—Within the last month there has been commenced at the Cramps shipbuilding works in Philadelphia a new branch of industry, the making of rapid firing machine guns. These guns are of the Driggs Schroeder type. They have been adopted by the United States as part of the secondary armament of the new war vessels. A contract has been made by the Government with the Driggs-Schroeder Company for 50 of these guns of the six pounder caliber. Hitherto the Colt Arms Company of New Haven, Conn., have made the guns, but they are unable to turn them out fast enough and the Cramps have undertaken the manufacture of a number.

Julian Kennedy, the well-known engineer and contractor, of Pittsburgh, has closed a contract with the Stewart Iron Company, Limited, of Sharon, Pa., for the erection of three Kennedy-Cowper hot-blast stoves 18 x 70 feet in size. These stoves are to replace others which have been dismantled, and are of the same type illustrated in *The Iron Age* some months since.

The Monarch Lathe Chuck.

The Oneida (N. Y.) Mfg. Chuck Company lately placed on the market the lathe chuck of which we here present engravings. The body is composed of a single piece and is recessed for the face plate, thus bringing the work very close to the lathe spindle. The face is slotted for bolts, which permits using the chuck as a lathe face plate. As the work is applied the jaws are forced against the face of the chuck, and the harder the pressure upon the jaws the more positive is this effect. This action makes it impossible for the jaws to lift off the face of the chuck in use or to pull outward. This effect is accomplished by the manner of attaching the movable jaw to the carrying nut. The nut has a projection above the face of the chuck which enters a corresponding open-

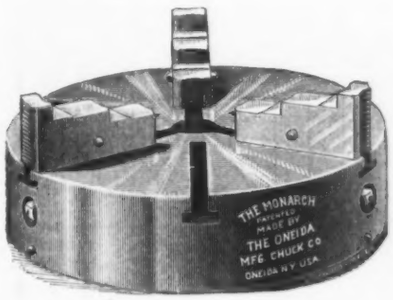


Fig. 1.—Perspective.

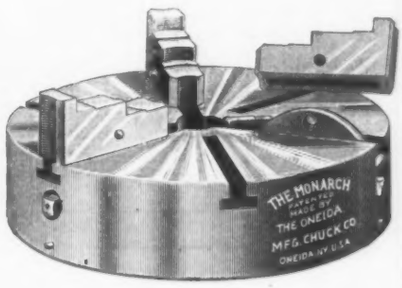


Fig. 2.—Combination Lathe Chuck.

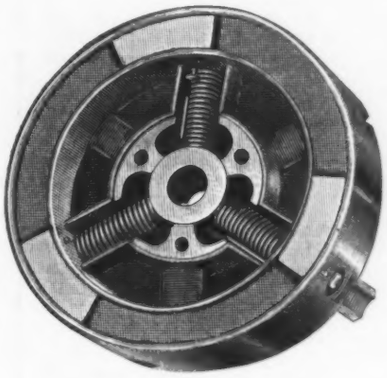


Fig. 3.—Back View.

Fig. 4.—Working Parts.

THE MONARCH LATHE CHUCK.

ing in the jaw. Through these parts pass a hardened steel pin, exactly fitting the hole through the jaw, but not the nut, which has a V-shaped hole, pointing upward. The pressure upon the jaw in either direction forces the pin against the wedging sides of this hole with inevitable results. This pin coupling between the nut and jaw not only does this remarkable gripping, but is also the means of making what is claimed the quickest reversal of jaws ever yet inverted. The accompanying drawings show the working parts and their arrangement.

This Government is giving more attention to improved fire arms and cartridges. The Army Board, under Colonel Robert Hall, at Frankford Arsenal, is investigating the serviceability, reliability of action and general worth of all the various fire arms recently invented in England, France and Germany as well as in this country, and proposes to make an exhaustive study of all the various phases of the subject, including explosives and projectiles, before making a report to the War Department. Experiments are being made in the manufacture of cartridges, and it appears to be pretty well settled that German silver will be the metal adopted for the small arm projectile of the future. It is the purest of all substances yet proposed for this purpose, is less affected by the heat of the arm in reloading, and does not deteriorate to any great extent by contact with the atmosphere.

Swedish Iron Statistics.

From the official report just issued of the mining and metallurgical industries in Sweden in 1890, we learn that the number of iron mines worked was 300, when 940,428 tons of ore were raised, as against 393 mines and 983,600 tons in 1889, and 485 mines and 937,000 tons in 1888, and 655 and 884,000 tons in 1887. It appears, therefore, that the number of mines worked is gradually decreasing, which chiefly refers to small mines. In addition, 812 tons of lake and bog ore were raised in the provinces of Jönköping and Kronoberg, against 2290 tons in 1889. Coming to the Swedish pig iron industry in 1890, we find that 154 furnaces were in blast, turning out 456,100 tons, of which 4659 tons were castings, produced direct from the furnaces. In 1889 the number of furnaces was 150, and the output 420,700 tons. The number of furnaces in operation, as well as the manufacture of pig iron, in Sweden is decreasing year by year, which is, of course, due to the declining demand and wretched prices for this kind of iron of late years. The number of workmen employed in the pig iron industry in 1890 was 3862, as against 3823 in 1889. In the resmelting of pig iron into castings 119 works were engaged, turning out 32,970 tons, as against 122 works returning 33,000 tons in 1889. The total production of all kinds of iron castings last year was 39,022 tons, returned as follows: Direct from furnaces, 4659 tons; resmelting of pig iron, 32,970 tons; Bessemer castings, 169 tons; Martin castings, 1224 tons.

Turning to the Swedish bar-iron industry in 1890, we find that 157 works with 445 hearths were engaged in the same, turning out 281,832 tons, while in 1889 181 works with 473 hearths produced 274,400 tons, the increase in the year being therefore 7400 tons, and in 1889 there was an increase of no less than 26,000 tons. At 99 works 225,630 tons of blooms were turned out, of which 57,500 tons were drawn into bars at other works. In 1889 the make of blooms amounted to 226,000 tons. The quantities and methods of manufacture of bar iron were as follows: Bessemer, 49,232 tons (1889, 40,200 tons); Martin, 40,068 tons (1889, 33,600 tons); Walloon, 6466 tons (1889, 6090 tons); Lancashire, 178,345 tons (1889, 177,000 tons); Franche Comté, 6644 tons (1889, 8900 tons); puddling, 758 tons (1889, 650 tons); Uchati, 317 tons (1889 —). The total make of Swedish bar iron during the period 1886–1890 was as follows: 1886, 232,000 tons; 1887, 250,000 tons; 1888, 248,000 tons; 1889, 274,400 tons; 1890, 281,830 tons.

In 1890 the product of steel in Sweden was 94,239 tons of Bessemer steel, 72,989 tons of open-hearth steel and 2055 tons of other kinds of steel, a total of 169,283 tons. In 1889 the figures stood: Bessemer, 80,310 tons; open hearth, 135,980 tons, and other kinds 1920 tons, a total of 218,210 tons.

As regards the manufacture of finished iron and steel goods, we find that last year 153 works were occupied in this industry, turning out 78,990 tons, as against 152 works and 74,000 tons in 1889. The manufacture embraced 28,928 tons of plates (in 1889 27,400 tons); 12,142 tons of nails (in 1889 12,070 tons); 10,105 tons of rails (in 1889 8900 tons); 6118 tons of tools and agricultural implements (in 1889 5600 tons); and 21,704 tons of sundry iron and steel wares (in 1889 20,100 tons). The figures referring to rails are worthy of note, as in 1888 65,000 tons were turned out, but in 1887 none. It was in 1888 that the Riksdag decided upon giving a bounty to this industry. In the above industry and manufacture of steel 9991 persons were employed, as against 8919 in 1889.

The total number of persons employed in the iron and steel industries was 23,615, as against 23,051 in 1889. There were 51 accidents in iron mines, 21 being fatal, as against 42 and 18 respectively in 1889. The number of steam engines employed in the industries was 144 of 8023 horsepower.

In the case of the Chicago Sugar Refining Company against the Casualty Company of Baltimore, which Judge Gresham of Chicago has had under advisement for the last six months, he has handed down a decision in favor of plaintiff for the sum of $44,241. Especial interest was manifested in the case by insurance men, as it was a test case for the form of policy issued by the Casualty Company. All kinds of accidents to employees, in the nature of boiler explosions, &c., were covered by the policy. The accident which caused the death of the sugar refining company's employees and for whose deaths the company claimed $100,000 from the Casualty Company arose from an explosion of dust. The cause was said to be spontaneous combustion. Because of the nature of the cause of the accident the Casualty Company denied the sugar refining company's right to recover.

Several workable coal veins have been opened at Niga Islands, Alaska, and a tramway built to tidewater. It is asserted that cargo lots can be sold in San Francisco at $4 per ton.

Graphic Method for Calculating Slags.

BY A. J. ROSSI, NEW YORK.

The method of reduction to lime and silica of all the elements of a slags affords, as we have had occasion to explain, a rapid manner of calculating the charges of a blast furnace, and, at any rate, is an expeditious one for comparing slags together. It may prove convenient to operate such transformation by a graphic construction. Outside of the principal constituents—lime, alumina and magnesia—blast furnace slags contain but a relatively small percentage of oxides of iron and manganese and alkalies, with sometimes a little baryta when certain ores are used. Even when special products, such as ferromanganese and spiegeleisen, are manufactured, manganous and ferrous oxide are the only elements of which the importance becomes serious outside of the earthy bases.

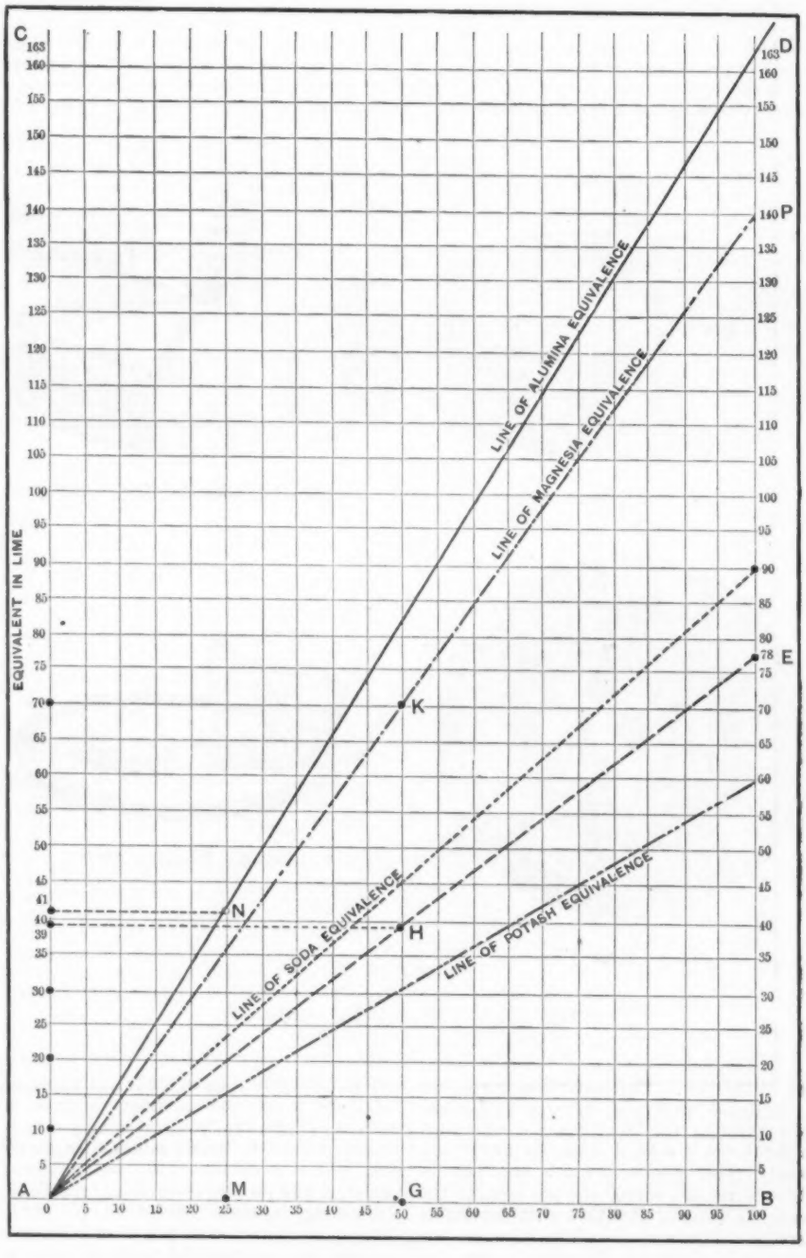
The equivalence in lime of manganous and ferrous oxides being 0.78, that of alkalies on an average of 0.75 (soda 0.90, potash 0.60), it can be readily seen that by adopting a figure such as 0.78 for the equivalence in lime of all the elements of a slag or ores and stone, other than the three bases alumina, magnesia and lime, a sufficient approximation can be obtained.

Suppose that the horizontal line A B, divided into 100 equal parts (subdivided if wished), be taken as representing 100 per cent. of alumina, magnesia or in general 100 per cent. of any base, R O, whatsoever. Draw a line, A C, perpendicular to A B, and having divided it in the same manner as A B has been, draw by the points of division of A B and A C vertical and horizontal lines, carrying the division of A C beyond 100. We thus obtain a rectangle, A B C D, divided in a number of squares as small as desired. Profile paper is very well adapted for such purpose, such for instance as is divided into millimeters.

Let the equivalence in lime of a certain base R O be 0.78; 1 pound of R O = 0.78 lime, 100 R O = 78 lime. If, then, we carry or read at B, on the vertical B D, B E = 78 and join A E, the latter line will be what we may call the line of equivalence of the base R O.

If we have to find how much a certain percentage, A G (say 50 per cent.), of this base R O is equivalent in lime, we see that the vertical line G H, erected at G, intersects the diagonal A E at H, and we read immediately, by following the nearest horizontal line passing by H, or appreciating between which horizontal lines of the diagrams does fall the horizontal line passing by H, or even scaling G H, if preferred, that A G, equal to 50 per cent. of base R O, is equivalent to 39 per cent. lime.

Since 1 magnesia = 1.40 lime, 100 magnesia = 140 lime; carrying or reading on B D, B P = 140, and joining A P we have, at the intersection of the diagonal A P with any vertical line, G K, corresponding to a certain percentage of magnesia, such as A G (50 per cent.), read on the horizontal line A B, the equivalence of any quantity of magnesia in lime. We read at once in this case G K = 70, hence A G = 50 per cent. magnesia = 70 per cent. lime as far as saturation for silica. In the same manner, since 1 pound alumina = 1.63 lime, 100 alumina = 163 lime. Carrying on B D, B D = 163, and joining A D we have in the diagonal A D the line of equivalence of alumina. For instance, A M = (25 per cent.) alumina, corresponds to M N of lime, which reads very nearly 41 per cent. lime; the exact calculation would give 40.80. With divisions of $\frac{1}{1000}$, subdivided in half, as can be readily obtained with the kind of section paper mentioned, the results could be very closely read. It is evident that if we do not wish to assume for all the elements of a slag other than alumina, magnesia and lime an average satuation of 0.78, we can just as easily and in the same manner construct a diagonal representing ferrous and manganous oxides (of which two substances the equivalence in lime is the same), another for potash (1 potash = 0.60 lime), another for soda (1 soda = 0.90 lime), in fact, one to represent any basis whatsoever for which the equivalence in lime for 1 pound is known. If one line is constructed specially for manganese, and iron at 0.78 equivalence, the alkalies potash and soda can be taken as equivalence at 0.75 on an average, or at their respective values.



With such diagram we can then transform at once in silica and lime a slag, or, in general, any given analysis of the materials coal, stone and ores entering in the charges of a blast furnace and the further calculations of the quantities of limestone to be added to 1 ton of ore and a corresponding assumed quantity of fuel could be easily carried on. These calculations can even be avoided by using a proper and special diagram, as we will see further.

Suppose that, using the preceding diagram of equivalence, we have found the analyses of the materials at our disposal, transformed in lime, to correspond in hundreths of a ton to:

Ore, 1 ton.	Fuel, $\frac{3}{4}$ ton.	Stone, unknown quantity.
Silica a	Silica a'	Silica a''
Lime b	Lime b'	Lime b'' (in 1 ton)

and assuming $\frac{3}{4}$ ton of fuel for 1 ton of ore we have to calculate the quantity of limestone to be added to obtain a slag of such a type, of such a character of basicity, as explained previously, that its analysis reduced to lime and silica would be: Silica m, Lime $n = 100 - m$; a' and b' represent the hundreths of a ton of silica and lime in the actual quantity of fuel assumed to be used with 1 ton of ore, and these quantities a' b' are reduced from the amount of these constituents in 1 ton of fuel, applying the assumed proportion of fuel to ore.

Let x be the unknown quantity of lime required for 1 ton of ore and the proportional quantity of coal assumed.

The total amount of silica which can enter the slag is represented in ton and fraction of a ton by $\frac{a}{100} + \frac{a'}{100} + \frac{a'' x}{100}$, the

sum of the different amounts of silica in the quantities of ore, fuel and stone used. The total weight of the materials entering in the slag, in tons, is evidently

$$\frac{a}{100}+\frac{a'}{100}+\frac{b}{100}+\frac{b'}{100}+\frac{a''\,x}{100}+\frac{b''\,x}{100},$$

being the sum of all the silica and of the earthy basic elements transformed into lime entering in the composition of ores, fuel and stone according to the proportion of each. Hence the amount of silica to be expected in 1 ton of slag is equal to

$$\frac{\text{total amount of silica}}{\text{total amount of slag}}=\frac{\left(\frac{a+a'+a''\,x}{100}\right)}{\left(\frac{a+a'+b+b'+a''\,x+b'\,x}{100}\right)}$$

$$=\frac{a+a'+a''\,x}{a+a'+b+b'+a''\,x+b''\,x}$$

But since the type of slag expected reduced to lime must contain

Silica, M per cent.
Lime, N per cent.

$$M+N=100$$

in 1 ton of such a slag there must be $\frac{M}{100}$ of silica, putting $\frac{M}{100}=M'$

We have the equation

$$\frac{a+a'+a\,x''}{a+a'+b+b'+a''\,x+b''\,x}=\frac{M}{100}=M'$$

$\frac{M}{100}$ is found immediately. If the slag is to contain 36 per cent. of silica (as the type),

$$\frac{M}{100}=\frac{36}{100}=0.36 \text{ ton.}$$

If it is 40 per cent silica $\frac{M}{100}=\frac{40}{100}=0.40$ ton. This equation solved gives

$$x=\frac{(a+a')-m'\,(a+a'+b+b')}{m'\,(a''+b'')-a''}$$

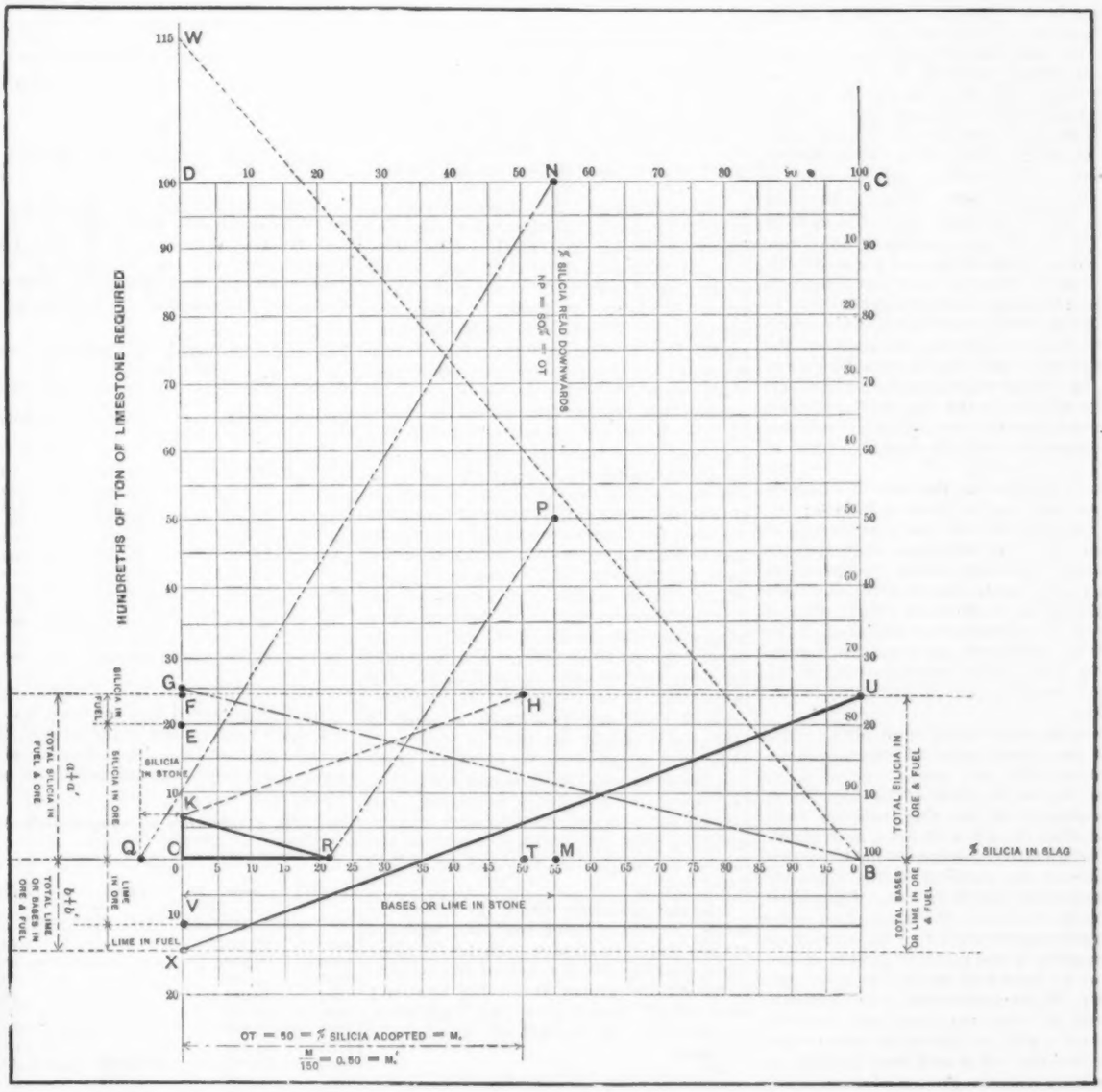
materials to be used in a furnace transformed into lime be as follows:

In 1 ton ore.	In 1 ton fuel.	Stone, 1 ton.
Silica. 20.00	Sio^2. . 5.333	Sio^2. . 5.00
Lime. 10 00	Lime. 4.00	Lime. 50.00

We have assumed, say, $\frac{3}{4}$ ton of fuel per ton of ore. Hence, in this quantity of $\frac{3}{4}$ ton of fuel there is only, in fraction of a ton: $\frac{5.333}{100}$ ton $\times\frac{3}{4}=\frac{4}{100}$ ton and $\frac{4}{100}\times\frac{3}{4}=\frac{3}{100}$ lime, and we have for the analyses of materials used, and in the quantities of the same, 1 ton ore, $\frac{3}{4}$ fuel, in hundredths of a ton:

Ore.	Fuel	Stone, unknown quantity.
Silica. 20.00	Silica. 4.00	Silica. 5.00) per
Lime. 10.00	Lime. 3.00	Lime. 50.00 (ton

Suppose that we have decided to obtain a slag of such a type that it will contain: Silica, 50; lime, 50; a neutral slag, monobasic; 50 silica take up 50 lime; 1 silica take up 1 lime; 1 lime saturates 1 silica. By reasoning as explained in a previous article we may say the 10 of lime in ore saturating 10 silica leaves 20 — 10 = 10 free silica, and the 3 of lime in fuel saturating 3 silica leave 4 — 3 = 1 free silica. Total free silica in ore and fuel = 11, which will take 11 lime. The 5.00 silica of stone will take up 5.0 of lime, leaving in stone 50 — 5 = 45 free lime. We require 11 lime to satu-



and we have the following rule to calculate slags:

Rule.—Having first transformed into lime and silica by means of the diagram all the analyses in lime, applying the proper corrections for assumed amount of coal:

1. Add together the lime and silica of the ore (1 ton) and fuel (corresponding assumed quantity), multiply this sum by the number of hundredths of silica intended to be obtained in the type (0.36 if the type is to contain 36 per cent. silica; 0.35 if it is to contain 35 per cent. silica) and subtract this product from the sum of silica in ore and fuel used.

2. On the other hand, multiply the sum of silica and lime in the stone by the number of hundredths of silica expected in the slag, subtract from the product the silica of limestone, and divide the first quantity calculated as in 1° by this remainder. The quotient is the amount of lime required. We will illustrate it by one example: For instance, suppose that the analyses of the

rate the 11 free silica of ores and fuel. We dispose of 45 free lime in 1 ton of limestone. We want of limestone, then, for 1 ton ore and ¼ fuel, $\frac{11}{45} = 0.244$ ton of limestone. Let us now apply the preceding rule and formula without any of the preceding reasonings: We add together silica and lime of ore and fuel. This gives 20 + 4 + 10 + 3 = 37. We multiply this number by 0.50. Since the slag is to contain 50 per cent. silica, we have 37 × 0.50 = 18.50. We subtract 18.50 from the sum of silica in ore and fuel, which is 24.00; this gives 24 — 18.50 = 5.50.

On the other hand, we add the silica and lime of stone, therefore 5 + 50 = 55. We multiply this by 0.50, the percentage of silica adopted in slag, and obtain 27.50, and from this number we subtract the silica of stone, which is 5; the remainder is 27.50 — 5 = 22.50.

The quotient $\frac{5.50}{22.50} = \frac{550}{2250} = \frac{55}{225} = \frac{11}{45}$ = 0.244 ton is the quantity of limestone required for 1 ton of ore and ¼ ton of coal.

The above formula and resulting rule has the advantage that it applies also to the case in which, not using the method of reducing to lime the elements of the ore, fuel and stone, the charges are calculated by fixing beforehand a certain percentage of silica in the slag to be obtained in the complete analysis, using the analyses of the materials without transformation to lime.

Rule.—In this case the rule is virtually the same and can be given as follows:

1. Add together all the constituents of the ore and fuel, whatever they may be (carbonic acid and water excepted, of course), as given by the analyses, multiply the sum by the number of hundredths of silica to be contained in the slag (if the slag is to contain 36 per cent. silica, multiply by 0.36, and so on) and subtract the product from the sum of the silica in ore and fuel.

2. On the other hand, multiply the sum of all the constituents of the limestone (carbonic acid and water excepted, of course) by the number of hundredths of silica aimed at in the slag, subtract from the product the silica of stone and divide the first quantity obtained as in 1° by this remainder; the quotient is the quantity of limestone required in ton. Care must be taken to reduce the amount of silica and other constituents in 1 ton of coal to the quantity of coal assumed per ton of ore. But, as we have had occasion to show previously, 36 per cent. silica in the complete analysis of a slag may not and does not necessarily with all kinds of ores correspond to a slag of a sufficient basicity to accompany certain grades of iron, while 36 per cent. of silica in the analysis of a slag transformed into lime and silica (corresponding thus to 64 per cent. lime) will most invariably accompany the darkest grades of pig iron. A graphic construction can be given for the preceding formula, and a special diagram constructed so as to avoid even these calculations.

Such a diagram can be easily constructed as follows:

Draw two lines, O B, O D, at right angles to each other and divide them into 100 equal parts, each division being itself subdivided into 2 or 4 parts, which can be easily obtained by using, as already said, "section paper," on which paper lines as close as 1 mm. apart are ruled at right angles to each other. Taking for instance on such paper 2 mm. = 1 per cent. silica, 1 mm. will represent ½ per cent. silica, and even the half millimeter can be readily estimated, thus giving, in fact, .25 per cent. of silica. Assume A B to represent the number of hundredths of silica in the slag expected; we wish to calculate the charges of a furnace with the ores, fuel nd stone of the composition quoted above, and in such a manner that the slag resulting reduced to lime and silica (the type) will contain 50 silica, for instance, consequently 50 lime.

Carry or read above O on A D, O E = 20 = silica of ore in 1 ton and E F = 4 = silica in ¼ ton fuel, (or any other proportion adopted per ton of ore); O F = 24 silica in ore and fuel = $a + a'$. Carry below O, O V = 10 = lime in ore. V X = 3 = lime in fuel, or O X = 13 = lime in ore and fuel. The percentage adopted being 50 silica in slag (transformed in lime)—that is, $\frac{50}{100}$—scale, or read O T = 50. The vertical line passing by T intersects the horizontal line (24—24), representing the sum of silica in ore and fuel at H, and this line (24—24) intersects the vertical line B C at U, which reads also 24, of course. Draw U X and by H draw H K parallel to V X; it intersects O D at the point K and gives us the line O K to be used further. This line O K is the numerator of the formula; it reads 5.50. Carry or read on O B, O M = sum of lime and silica of limestone = 55, the vertical line M N (55—55) intersects D C at N (55). Carry to the left of O D, O Q = silica in stone. Draw N Q by the point P where the vertical line 55—55 intersects the horizontal line 50—50, corresponding to the per cent. of silica adopted (read downward from N in this case); draw P R parallel to N Q; this gives the point R. O R is the denominator of the formula. Join together the two points K R, the ultimate objects of the construction. By B draw B G parallel to K R; O G is the per cent. of a ton of limestone required for 1 ton of ore and three-fourths fuel. We read easily even on this approximate diagram O G = 25—that is, $\frac{25}{100}$ ton of stone to be added; the direct calculation has given us 0.244. It may and will happen that this parallel B G intersects O D beyond the point D (100). For instance, for a per cent. of silica adopted of 30 silica in the slag, it would do so. If the divisions of O D are prolonged beyond D (100), as it should be; then in such case were such a point as W obtained, reading, for instance, 115, it would show that to 1 ton of ore and ¼ fuel, in order to obtain 30 per cent. of silica in the slag reduced to lime and silica, it would be necessary to use $\frac{115}{100}$ ton of limestone or 1.15 ton stone.

All the distances could be scaled directly, instead of being read, but with the section paper ruled at a sufficiently large scale, nothing else is required but to construct on the proper frame the auxiliary lines which finally give the hight O G, representing the amount of limestone to be used.

The reasoning has been made in the supposition that all the analyses of ores, fuel and stone have been reduced to lime; but, as we have shown, the formula applying also to the case in which such transformation in lime has not been made, the construction would be identically the same, without transforming to lime the basic elements of the materials of the charge. Were the calculations of the charges to be made by assuming a certain percentage of, say, 36 per cent., or any other figure, such as 50, in the complete analysis of the slag and not any more in that of the slag reduced to lime and silica as above.

Only, in this case, wherever the word lime occurs it has to be understood to include and to mean all the basic elements of the materials, lime included.

Hence: O F representing always as before the sum of silica of ore and fuel, and O T, equaling 36 or 50, the percentage of silica adopted, O X would, in such case, be taken equal to the sum of all the basic elements of the ore and fuel—that is, equal to the sum of alumina, magnesia, lime, baryta, alkalies, &c., in ore and fuel without transformation in lime.

O M, in the same manner, would be taken to represent the sum of the silica and of all the same basic elements in the stone, lime included, not transformed in lime. The constructions would be identical; but, again, it might happen, as it has been already insisted upon, that the quantity of limestone thus found required for 1 ton ore and ¼ fuel, though furnishing a slag of such a composition as intended—that is, one in which would be found 36 per cent. of silica in the complete analysis—may not be sufficient to give a slag of a sufficient basicity for certain grades of iron, while a slag based on a type containing 36 per cent. of silica and 64 of lime in the analysis transformed in lime, would certainly insure a certain character of basicity desired.

The Basic Process in Austria.

Very complete data has been printed in the *Oesterreichische Zeitschrift* für Berg- und Hütten Wesen by Professor Franz Kupelwieser, on the progress of basic steel in Austria and Hungary. The production of Bessemer steel has been as follows:

Austrian Production of Bessemer Steel. Metric tons.

Year.	Acid.	Basic.	Total.
1879	87,202	3,500	90,702
1880	87,881	17,835	105,716
1881	116,709	31,889	148,598
1882	134,015	57,714	191,729
1883	141,554	88,429	229,983
1884	135,502	70,987	206,489
1885	149,557	76,821	226,378
1886	111,122	105,839	216,961
1887	114,783	118,379	233,162
1888	149,220	139,127	288,347
1889	133,601	141,416	274,417
1890	149,660	138,021	287,681

It will be observed that the basic and the acid share nearly alike in the output. The manufacture of basic open-hearth metal began much later, but developed far more rapidly.

Austrian Production of Open-hearth Steel. Metric tons.

Year.	Acid.	Basic.	Total.
1879	34,186	.....	34,186
1880	28,502	.....	28,502
1881	39,763	.....	39,763
1882	48,043	.....	48,043
1883	59,641	.....	59,641
1884	52,428	.....	52,428
1885	52,405	.....	52,405
1886	29,062	13,944	43,006
1887	22,508	43,522	66,030
1888	28,672	75 794	104,466
1889	35,921	106,174	142,095
1890	33,904	178,015	211,919

In 1880 basic steel constituted 13.4 per cent. of the whole product, while in 1890 it rose to 63.2 per cent. Of the whole product of 499,600 metric tons in 1890, acid Bessemer had 29.9 per cent., basic Bessemer 27.6 per cent., and open hearth 6.9 per cent., and basic open hearth 35.6 per cent.

As yet no settlement has been reached between the members of the Shenango and Mahoning Valley Pig Iron Manufacturers' Association and the Car Service Association, over the demurrage rates claimed by the railroad operators for the delay in unloading cars. As was stated some time ago, these demurrage charges aggregate a very large amount, and it is possible that a settlement will not be reached without the aid of the courts. Several meetings have been held recently in Youngstown between the parties interested, but without results.

Blast Furnace Plant.

ITS EQUIPMENT AND DESIGN.

H. Pilkington, general manager of the Midland Coal and Iron Company, Apedale Works, Newcastle, North Staffordshire, England, has recently delivered a presidential address before the South Staffordshire Institute of Iron and Steel Works Managers, from which we quote the following, since it well illustrates modern English practice, and gives credit for progressive development to American engineers, rather unusual with English iron masters.

The General Plant.

As all iron works must now be laid out with railways, even if served by canals, a comparatively level works is desirable. If low-lying land be adjacent for the disposal of the slag, it is all the better; but locomotives will ascend moderate inclines without difficulty, and as it is more economical to have all railways of the standard gauge, the locomotives are available for other purposes. The furnace bottoms are now always raised 10 or 12 feet above the ground level, in order to get the slag bogies well under the tapping hole and the pig beds level with the tops of the trucks; moreover, such pig beds and furnace bottoms can be well drained, and any break-out of metal or slag has an opportunity of flowing away, instead of being blocked up against the furnace. The furnaces are, or should be, further apart—double the distance formerly considered sufficient—or they are built in pairs with separate bogie holes, which have sufficient accommodation to do away with night tappers. This allows plenty of room round the furnaces, ample pig beds and room behind for ample stove power. Inclines are now displaced by the more rapid and efficient double lifts, fitted with proper safety tackle.

If the incoming materials have not to be calcined it is much more economical to have three or four through railways behind the furnaces, and for the fillers to unload the trucks straight into their barrows. Gantries are not economical, as there is extra work involved in lifting the materials off the floor plates into the barrows, apart from the cost of unloading the wagons. Filling direct from the trucks is also quite as economical as filling from bunkers provided with shoots, even if they are served with hopper bottomed wagons; but the bunkers have the advantage of holding stock. Where a works is served by canal there is an inevitable additional expense in raising the materials out of boats into furnace barrows, and it is seldom that within a reasonable distance all the materials can be raised from boats without handling a large portion of them twice. When the ores have to be calcined the nearer the kilns are to the furnaces the better, and they should be served from the mines with hopper-bottomed wagons and drawn at the bottom straight into the furnace barrows by means of shutes properly fitted with screens. In the case of blackband ores or tap cinder it is of course impossible to calcine them in kilns, and it is invariably better to calcine these materials in heaps at the place where they are produced, and then to transport them to the furnaces in trucks.

American Practice.

Turning now to the actual working plant, it is quite evident to all of us that the influence of American practice is making itself felt more and more in this country, and in my opinion it is only a question of time with us as to the adoption of their system of separate furnaces, separate blowing engines, separate blast mains, separate stoves and separate lifts, in order to place each furnace entirely independent of its neighbor, and make it possible to give it any treatment that may be deemed necessary without affecting the other furnaces in any way whatever. It is always convenient to group the engines and boilers together, the latter being fired from a flue common to all works, which does not at all effect the isolation of the furnaces. In modern works, with fire brick stoves, a gas flue is undoubtedly a more convenient means of supply than an overhead tube, and the gas is much easier of control; but in any case for the sake of safe and easy control the boilers should be at one end of the flue or main. And it is very easy to see that if the stove supply has to descend from an overhead main, it will be necessary to keep the gas at some amount of pressure, which is not always an easy or very desirable matter.

Boiler Firing.

The application of gas to boiler firing is of very great importance, and the correct method of its application has been a somewhat neglected point; evidence of this is easily found in the many very crude appliances seen at different works. If we go to the root of the whole matter, it is evident that, to get the best duty out of the gas, it is necessary to obtain complete combustion at the highest possible temperature; and this, of course, means the highest initial temperature. Now, if we turn gas into a boiler flue, or under an egg-ended boiler, with an inadequate or, on the other hand, an excessive supply of air, and allow it to come into immediate contact under what is, comparatively speaking, a cold boiler, it may be taken for granted that that gas will never reach a high initial temperature, that there will be no complete combustion, and therefore a bad duty. In other words, it is altogether wrong to turn gas into a boiler until it has been thoroughly mixed with the requisite quantity of air, and is in a state of perfect combustion. If it is turned directly into the boiler before this has been perfectly done, and boiler chills the gas down to below the proper temperature for perfect combustion, such gas often burns in the flues and chimneys after it has left the boilers, or is, on the other hand, so effectually cooled by the boiler and excessive amount of air that all its combustion is effected at too low a temperature for effective work. If we take the temperature of a boiler under pressure to be 300° F., and the gas in combustion at say 1500°, both of which temperatures are well within the mark, we can readily see what will naturally take place. Again, if we take the case of the ordinary firing boilers, we find here that there is a mass of incandescent fuel on the grate, which gives a very high initial temperature to the gases. The air for the combustion of the solid fuel is supplied under the bars, while that for the combustion of the gases is supplied through the door and the fire bridge, where the gases are intensely hot, and before they have come in contact with the boiler. These several conditions are conveniently attained in gas firing by the provision of a combustion chamber, or box, in front of the boiler, the former being used when provision is made for a grate, and the latter when a grate is dispensed with. These chambers or boxes should be always well lined with good fire bricks, which prevent any dissipation of heat, and therefore become intensely hot; and the air being admitted by proper regulators, combustion is instantaneous, and all the conditions are favorable for the attainment of a high initial temperature.

It is, of course, an axiom in modern blast furnace practice that the whole of the power required for all the purposes connected with the furnace shall be generated by means of the furnace gases. In the case of furnaces using coal, there is an abundance, and even an excess, of gas under any possible conditions whatever. But if we take the case of furnaces using only coke, and those furnaces working on the most economical modern methods, it is seldom that there is any surplus supply of gas, and that gas is, as a rule, exceedingly poor. In such cases egg-ended boilers are inadmissible, as they are most wasteful in gas consumption, and are the most troublesome and expensive type of boilers to be met with. It is quite clear that, in the future, it will be necessary to employ not only the most economical type of boilers, but also the most economical type of engines, and with the very much reduced fuel consumption of modern practice, and the necessarily poorer gas, we shall be compelled to adopt the highest type of tubular boilers and compound condensing engines. Of late years, great care and attention have been bestowed upon blowing cylinders, valves and blast connections of these engines, with the result that they are now very much more effective machines than formerly. There are, even now, however, many old engines at work which, as shown by the indicator, produce only about 50 per cent. of the blast they ought to produce, owing to the bad disposition of the valve boxes and connections, which are often contracted and tortuous. Besides this, the excessive clearance at the cylinder ends, together with the clearance in the valve boxes, prevents the inlet valves from opening until the piston has traveled some part of its stroke, and reduced the compressed air in these spaces to atmospheric pressure. Such engines may exist where, from the use of coal, there is an ample supply of gas, although more boilers are necessary, but with the modern coke furnaces already referred to they are not admissible.

Hot-Blast Stoves.

Taking next the question of hot-blast stoves, it is presumed that no one will advocate the retention of iron-pipe stoves; and we shall, therefore, not discuss them here. Fire-brick stoves, of some type or other, are becoming universal. The first and foremost requirement of a hot-blast stove is that it shall heat the blast to a high temperature, which means about 1500° F. or thereabouts; secondly, that it shall have means whereby it may be kept clean and free from dust, so that the temperature can be maintained. There are, of course, many other considerations, such as capacity in a given space, economy in first cost and in repairs, but the two first stated are of the greatest importance.

I believe it is generally admitted that the highest temperatures are obtained with the Cowper stove, and that the other forms of stove have been devised for facilities in cleaning and cheapness of construction. The Cowper stove obtains its greater temperature by a very complete combustion and very great absorbing surface. The walls are very thin—only 2 inches thick—and as the gas must work on both sides of this 2 inches, no heat can be absorbed into the brick work that is not readily given up to the blast, when the stove is put on blast. In fact, by the use of the honeycomb brick, this stove is as near being all surface as a stove can well be. The reserve of heat is retained in the combustion shaft and the top of the honeycomb fitting. The stove, when blast is passing, cools gradually upward from the bottom of the filling, through all the passages of which it is, of course, passing at the same time. It may be observed that all brick stoves do not work on this principle, those with thick dimension walls having their heat stored up in those thicknesses as well as the surfaces, and the interior of these walls only give this heat up as the surfaces are cooled, and, therefore,

give it up slowly, while the blast has to go up and down a series of divisions in order to get sufficient contact. Such a stove is the Whitwell, which, however, has not such thick walls as many other stoves have. As a stove with facilities for cleaning, the Whitwell stove holds a very good position, and has been extensively adopted for use where the gases are very dirty, as, for instance, where ferromanganese is manufactured.

The object of division walls in all stoves, apart from providing sufficient material to absorb the heat, is to secure the division of the stove into convenient compartments for cleaning, and the Massicks and Crooks stove is another illustration of this division, where, like the Whitwell stove, access is at the top and bottom, for the divisions to be cleaned by means of rods, without cooling the stove down for men to get inside. The Ford and Moncur stove is divided into four sections. This stove is intended to be cleaned by opening the valve at the chimney end and allowing the blast to rush out suddenly into the flue, thus entirely blowing out the dust. By an arrangement of internal valves the whole of the blast may be concentrated in one only of the four sections during this blowing, and by changing this section each time it causes a renewal of direction in the other three. This is a remarkably efficient way of cleaning, if it is done systematically. My own experieece has been confined to the Cowper stoves, and by the use of a valve called the Lister valve, which is an instantaneous relief valve, these stoves may be kept regularly quite clean, and never allowed to get dirty at all. The practice has been to substitute these valves for the cleaning doors at the top of the stove, and also of the manhole doors at the bottom, and to place one of them on the gas valve box. By doing away with any other means of releasing the blast from the stove, the stoveman is compelled every time he changes the stove from blast to gas to release it by means of one or other of these instantaneous valves. By using those under the filling, the blast and dust is blown out from below, but by using the valve placed upon the gas box, the stove is blown just the reverse way. Again, by using the valves at the top of the stove occasionally, the top of the honeycomb filling may be most effectually cleaned also. Such a system of cleaning which is done regularly every change time enables the heat to be regularly maintained without any falling off whatever. Unfortunately, the character of the dust or deposit does not always admit of its being removed either by blowing or shot firing, and it then becomes imperative that it should be removed by mechanical means. Practice now tends to raise the columns under the filling of Cowper stoves, so as to enable men to stand underneath, and use rods to clean out the passages, if they have been allowed to get choked up. This, of course, can be done at any casting time, as the heat, after a stove has been on blast, is at the upper part of the filling, while the bottom is comparatively cool.

Water-Cooled Valves.

One of the greatest troubles encountered by the use of very hot blast is the difficulty in getting the valves to stand it and keep perfectly tight. By the use of water-cooled slides and seatings this trouble has, to a great extent, been removed, but not perfectly so. Water is, also, not a very desirable thing to have where there is such a risk of undetected leakage. It may, however, be said that it is a great mistake to use water at too high a pressure, and in most cases there is no practical reason why it should greatly exceed the blast pressure. If the water is at or near the same pressure as the blast, the leakage through any crack or hole would be very slight, and chilled hearths from leaky tuyeres would not be so frequent. All water pipes should also be fixed overhead, so as to be out of danger should any metal break out from the furnace. A better way of cooling valves is by the use of cold blast impinging upon the slides. A good type of water-cooled valve is that of Westrays and Copeland.

The valves that give the least trouble, however, are those with plenty of metal in them, and it is not unusual now to make the slides 6 inches thick, and of cast steel, with a seating of proportionate strength. Red-hot blast has also caused an immense amount of trouble with the expansion drums it is usual to use in the hot-blast tubing. I have often speculated as to whether these expansion drums were really necessary or not. A recent opportunity gave the chance for testing this question. About half the usual number of these expansions were used, and no ill effect whatever was experienced. Those used were provided with flanges, so as to be readily changed when they cracked, or, if it was found possible, to merely make up with a ring of tubing. Owing to the necessity for having straight joint in the brick work lining at the two flanges, it was decided to brick the drums solid. This has kept them perfectly cool, and appears to answer all the requirements of the case. The truth is that well-lined tubing never ought to be hot enough to expand appreciably. It is the hot brick work inside the tube that expands, and it is in the brick work where provision for that expansion should be made.

The Furnace Stack.

Coming now to the furnace stack itself, we may readily see what great changes have occured by comparing a Staffordshire furnace in 1860 with an American one in 1890; and it may be noted that the greatest improvements have taken place between those years. The modern practice in the construction of the furnace shell is to have an iron cased furnace, supported on columns 18 or 20 feet high. The high columns keep the boshes cool and accessible, and these and the lintel plates are made sufficiently strong to receive the whole weight of the furnace lining and superstructure. It is essential that the hearth should be relieved of the weight of the lining, and the lining, in turn, relieved of the weight of the bell, hopper and platform; the latter object being accomplished by the use of internal brackets attached to the casing, which supports the whole of the fittings on the top of the furnace. The immense weight which the lintel plates upon the top of the columns have now to carry is met, usually, by the use of very heavy ribbed plates, or by relieving arches sprung from column to column; but by far the best method is that in use in America. This consists of three rolled joists bent to the circle of the furnace, and which support an ordinary flat lintel plate upon the tops of the columns, and which easily carry any extra weight likely to be thrown upon them by accident or uneven settlement. Owing to the enlarged size of the hearth, and to the blast mains being larger, the latter are now usually placed outside the columns, and this plan makes the outside of the boshes and hearth more accessible.

Water Cooling.

In order to preserve the internal shape of the furnaces, the most modern practice is to make the brick work as thin as possible, so that the cooling effect of the air will prevent any undue cutting. Not only so, but the use of cooling plates is now considered essential for such preservation. The Americans are, as usual, to the front in this particular, as in some of their furnaces there are no less than four rings of cooling plates in the boshes, and the brick work in no case exceeds 36 inches, and is often only 24 inches. The effect of the tall columns is to reduce the brick work considerably at the upper part of the boshes, and it is therefore kept much cooler than usual. No ill effects from the reduction in thickness will be felt if the brick work is properly relieved of the weight of the superstructure, and is properly and strongly bound; and it is quite certain that the furnace works better and with greater economy if its original shape is maintained. The greatest amount of cutting, of course, takes place at or about the tuyeres, and it was considered necessary, a little time ago, to considerably overhang the tuyeres to prevent this; and this overhanging was often detrimental to the proper working of the furnace. The Americans have overcome this cutting by an elaborate system of water cooling, by means of tuyere breasts and blocks. The tuyere itself is literally fixed in a series of other tuyeres, each with faced joints, so that, when a tuyere is lost and burnt out, there is practically no cutting, owing to the breast protection; and it may be said that some breast protection ought always to be provided, if only to prevent damage on changing tuyeres. In the construction of furnace hearths and crucibles there has of late years been very great progress made, and other things being equal, this may be considered the place where the output of metal is determined. The larger the diameter of the hearth, and, next to this, the greater the vertical distance between the tuyeres and the slag notch, the greater the output, it being always granted that there is a practical limit to these dimensions By enlarging the diameter of the hearth we give the furnace a greater melting area, and by raising the tuyeres above the slag level we keep them effectually clear of all molten material, and allow them to pursue their work without impediment. For the preservation of the furnace bottoms, especially where these bottoms have a tendency to grow, the best practice is to deepen the hearth, and keep 12 inches or 18 inches of metal always there, below the tapping hole. This practice not only keeps the bottom warm, and prevents the settlement and growth of objectionable scoriæ, but it also considerably reduces the erosion of the bottom by the metal.

The tapping hole should be always midway between two tuyeres, so that it may be kept cool and in good condition, a matter that is not at all easy if it is too near the tuyeres; and the same reasoning is applicable to the slag notch. The latter, to be convenient, should not be near the tapping hole. At the top of the furnace it is important that the gas tube should be of ample capacity, so that the gas may never exert any back pressure. The neck of the tube should be constructed so that no dust can accumulate and choke it, as there may be back pressure from that cause. The down comer itself should be, and often is, constructed as a dust catcher, to prevent the dust being carried over into the stoves and boilers. This dust catching has been further improved of late years by the use of very large tubes and flues, giving as slow a travel to the gas as possible, and also by allowing it to travel a considerable distance, and giving it sudden changes of direction, in order to make it deposit its dust before using it at the stoves. The bell should be fixed quite in the center of the furnace, and, in lowering, should work quite centrally, so as to get an equal distribution of material all round the furnace. It may be noticed that the usual beam or lever that suspends the bell is not quite satisfactory in this respect, and many proposals have been made to work the bell by an overhead steam or hydraulic cylinder, to keep it strictly vertical. These schemes have only met with limited success in this country, but are much more usual in America.

Furnace Lines.

If it is permissible to speak of the internal design of furnaces without getting into hot water, it may be said that experience now tends to reject both the very steep and also the flat bosh. The best practice is considered to be an angle of about 75°, and, personally, I have found that angle an exceedingly good one to work and a very good one to drive. The tendency is to make the hearth wider in order to drive quicker. Boshes and the upper part of the furnace generally are made narrower in proportion in order to avoid irregularities in the descent of the materials with these wide hearths. The furnace top and bell is, therefore, smaller than was formerly the case, and greater regularity in charging is the result. We can only speak very generally of these proportions, and it is often found that what will suit one works and one class of materials will not suit another. A furnace of a certain proportion and angle may work well at 300 tons, but might work very badly at 900 tons. We must determine all these matters by a study of previous performances, and if these are absent we can only apply those principles which generally we know to be correct. Furnaces often determine their own best working shape after a year or so of work, but the good designer's aim is to arrive at the shape before blowing in, and then to maintain it by every means in our power. I do not wish to be understood as approving the high makes of iron prevalent in America; those makes are obtained by an expenditure of fuel which would be considered as equivalent to a handsome profit in this country, and may be taken generally as 1½ hundredweight of coke per ton over and above our usual consumption. But there is a very wide margin between their practice and ours, and somewhere in the margin we may find that production which is consistent with economical practice.

Movement of Gold.

Mr. Leech, the Director of the Mint, will present for the first time in his forthcoming annual report a complete list of the shipments of gold from New York during the past summer, with the names of the shippers, the rates of exchange and the destination of the metal. The total amount exported from New York was $70,223,494.31.

An examination of the list discloses the singular fact that of this large amount all but $9,300,000 was shipped when the rate of sterling exchange was below the point (about $4.886) at which gold shipments can be made without loss. The movement, therefore, must have been artificially stimulated by banks and bankers in Europe paying a premium on gold or making discounts to bill drawers for cash remittances.

The exhibit of the return movement of gold is as follows:

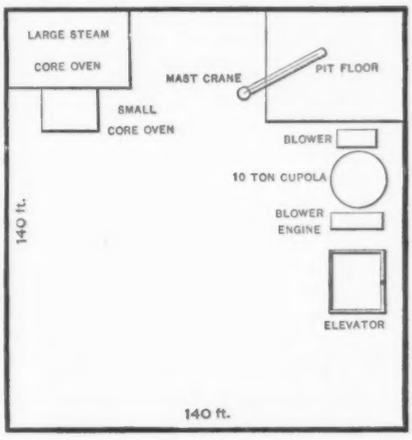
Imports of Gold Coin and Gold Bullion at New York from July 1, 1891, to October 31, 1891.

Month.	Country.	Coin and bullion.
July	England,	$267,658
	France,	120,625
	Germany,	306,603
September	England,	333,225
	France,	3,550,180
	Germany,	2,057,635
October	England,	8,119,853
	France,	5,311,754
	Germany,	289,097
Total		$20,863,230
During the same period there were received at the port of New York the following amounts of gold coin and bullion from Mexico, Central and South America and the West Indies, viz		1,460,543
Grand total		$22,323,773

Random Shop Notes.

IRON FOUNDRY ON THE SECOND FLOOR.

A recent visit to the works of Coulter & McKenzie, Bridgeport, Conn., revealed a very unique arrangement, as far as their iron foundry is concerned. The works are located on a valuable piece of ground which is growing steadily in price, and which does not permit of any ground extension owing to the value of the adjoining property. It became necessary to increase the foundry facilities, and after due consideration of the subject it was decided to place the foundry on the second floor, which had been previously used as a machine shop. Under the stringers were placed cast-iron water pipes, the bell having been cut off. These were used for the reason that an opportunity offered of obtaining them at a price much lower than it was possible to cast them in the works. The stringers consist of I beams 15 inches deep placed 8 feet between centers. Lighter transverse beams unite these floor beams and carry the floor, which consists of a double thick brick arch. On top of the floor thus constructed was placed 15 inches of molding sand.



Iron Foundry on Second Floor.

The general arrangement of the foundry itself will be understood from the accompanying plan. The pit was formed by building from the ground two walls forming a square well, the sides of the building constituting the other sides. Between the pit and the elevator is a 10-ton cupola. The engine driving the blower is placed the other side, this arrangement being made in order that the blower may be under full control. The elevator extends from the ground floor up to the roof, the latter being used as a flask yard. The sand, coal and iron pits are on the ground floor, where are also placed the tumbling barrels, each being in a small closet by itself. The general arrangement has been found so far to give the utmost satisfaction, material for the cupola being loaded on the ground floor, elevated to the platform and the completed castings, handled by small traveling cranes, being easily brought to the elevator shaft. Castings weighing 6 to 8 tons have been here made most successfully and afterward handled without undue inconvenience or expense.

PATCHING A STEAM HAMMER CYLINDER.

Directly under the foundry above described we found a steam hammer which some time since developed a crack in the cylinder of such proportions as to disable the machine. The base carrying the anvil, the column and the cylinder were cast in one piece, so that it became a question of some simple and cheap method of repairing the crack or else discarding the hammer. A patch made of wrought iron about ⅝ inch thick was hammered to fit the outside of the cylinder, to which it was held by bolts. A yoke consisting of 1 x 1¼ inch bar was then bent around and its free ends taken to the back of the column. A straight bar was then bolted across the ends of the yoke and the whole thing was tightened up by wedges driven in between this bar and the column. The repair was made some months since, and has so far developed no weakness whatever.

Steamboats in the United States.

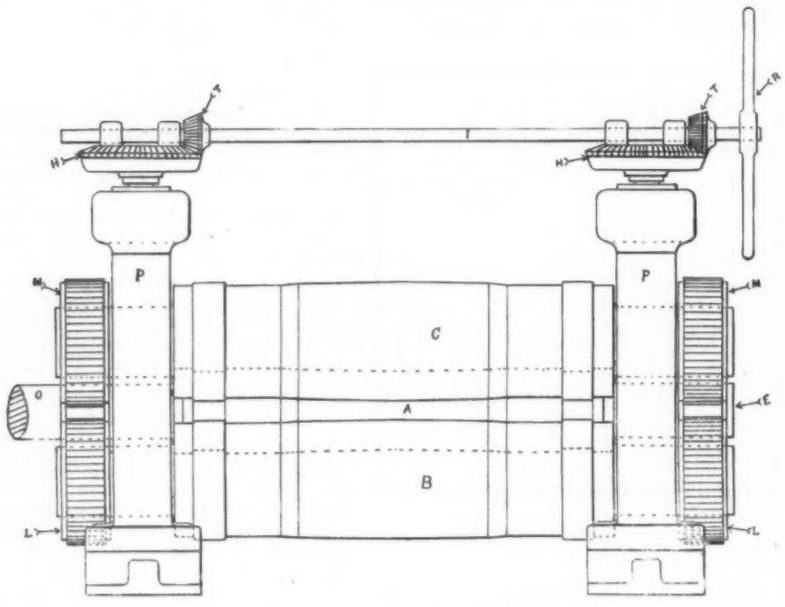
The annual report of the Supervising Inspector-General of Steamboats shows that during the year ending June 30, 1891, there were inspected 7404 steamers having a net tonnage of 1,503,324. The real object of all the laws, original as well as later ones, has been to guard against and prevent accidents and loss of life from accidents resulting from the use of steam as an agent for propelling the vessels upon which it is employed. How well the objects of the law have been accomplished in this respect is shown in the fact that during the year but six accidents to marine boilers or steam pipes have occurred, whereby 14 lives have been lost, notwithstanding at least 600,000,000 passengers have been exposed during the year to the possible chance, reduced to a minimum through careful inspection, of explosion of upward of 10,000 boilers in use on 7404 steam vessels; whereas the accidents to boilers in use for other than marine purposes throughout the United States, as reported in the *Locomotive*, issued by the Hartford Steam Boiler Insurance Company, for the calendar year of 1890, other than on steam vessels, was 198. Total number of persons killed, 206. Total number injured, 342.

Carrying merchandise around the Horn in sailing vessels is still a profitable business, despite the competition of transcontinental railways. But sharp rivalry is threatened by the introduction of whaleback steamers, some of which will tow steel barges between ports on the Pacific side. About 40 large ships are now performing the service between San Francisco and ports on the Atlantic. The Shenandoah, of 3258 tons register, the largest sailing ship afloat, is one of the vessels engaged in this trade. Among the others are the Rappahannock, 3056 tons register, the Willie Rosenfeld, 2353 tons register, and half a dozen ranging in tonnage between 1600 and 2000 tons. Few ships below 1200 tons make the voyage. These American ships are so built that they carry more freight and sail faster than any other ships in the world. They sometimes make the triangle to China, to the Pacific Coast, and back to New York. Now and then they carry grain to England, and load there for San Francisco. This they can do profitably when freights from Great Britain to San Francisco are as high as 20/ the ton. Just now they cannot profitably make the voyage, and they find it better to return from England to New York in ballast if necessary, and to sail hence for San Francisco. Freights from Great Britain to San Francisco are now from 12/6 to 15/ per ton, while freights from New York to San Francisco are $7.50 per ton. It is reported that a dozen barks will be built down East the coming year for traffic between New York and Puget Sound.

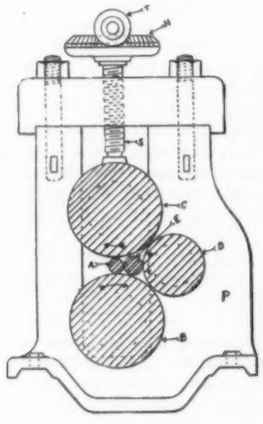
A twin screw steamer 225 feet in length, with triple expansion engine, will be built by the Harlan & Hollingsworth Company, of Delaware, to run between this city and the fishing banks

The Jones Machine for Molding and Condensing Round Bars.

John R. Jones of 4424 Dexter street, Manayunk, Philadelphia, has designed a machine for straightening rolled tapered axles. After the rolls have given the desired shape to the axle it is straightened in the machine at the same heat, receiving no injurious effects as in a gauge press, and requiring no turning in a lathe. The crust of the axle, which is the strongest and most condensed metal, is preserved, and being worked all over at the same heat, it is free from any hurtful strains, thereby making it stronger and superior to a hammered axle. The machine, with the attention of one man, is capable of finishing an axle in less than two minutes. Each axle is a duplicate of the other, is true and straight, and the weight and diameters of each section are the same. The machine can also be used for giving a smooth finish to a variety of drop forgings that have to be finished in a lathe.



Side Elevation.



Cross Section.

MACHINE FOR MOLDING AND CONDENSING ROUND BARS.

To describe the machine, reference being had to the drawings, the rolls B C are set in a pair of housings, P P, the axle A being shown in position. The roll B has on each end gear wheels L L, which receive motion through gears on the roll D, its face corresponding to the shape of the bar to be operated on and moving with the parts in contact. The roll C is set in bearings parallel with the roll B and above it, but separated enough so that the axle A will roll between them, its face being shaped to correspond with the bar or axle and moving with it, but in the opposite direction to the face of roll B, receiving motion through gears M M from the axle D. The roll C is balanced with weights or springs, and is adjustable; it is held in position with screws S S, controlled by the hand wheel R on the shaft I, and bevel wheels H H and T T. Hydraulic or other power can be applied to give pressure to the roll C during the operation. The roll D is set in bearings on a line obliquely with the roll E, and its face corresponds to the shape of roll E. The roll E is a small roll set in bearings between the rolls B, C and D. During the operation it keeps the bar in line with the axis of the rolls B and C, its face corresponding to the shape of the bar and the face of the roll D, receiving its motion and support from the face of the roll D when in operation. The bar or axle A is rolled between the rolls B and C, and against the roll E; motion is then given to the rolls, and pressure to roll C, the axle revolving with the rolls, making it straight and true, and giving it a smooth and glossy appearance.

The Affairs of J. P. Witherow.

As announced in *The Iron Age* of last week, a meeting of the creditors of Jas. P. Witherow, engineer and contractor, Lewis Block, Pittsburgh, Pa., was held in the office of the firm in that city on Wednesday, 25th inst. Willis L. King of Jones & Laughlins, one the largest creditors, acted as chairman. Mr. Witherow submitted a statement of his assets and liabilities, which was printed in full in the issue referred to above. After this statement had been received by the creditors, Mr. Witherow made the following proposition for the payment of his indebtedness.

"I propose to pay all my debts in ful at the rate of 6 per cent. per annum, at the following dates, viz.:

Twenty-five per cent. on or before December 31, 1892.
Twenty-five per cent. on or before December 31, 1893.
Twenty-five per cent. on or before December 31, 1894.
Twenty-five per cent. on or before December 31, 1895,

and to give my creditors notes maturing at the above dates for the principal and other notes for the interest, maturing every six months.

"I wish, however, to have the privilege of paying any of said notes before maturity, and can assure you that I shall make my most earnest endeavors that way.

"As security for payment of this indebtedness, I will execute and deliver to trustees a mortgage on all my real estate, plant and fixtures, but with consent of trustees before named, may mortgage, provided proceeds of same be placed with said trustees in payment of these notes."

The proposition of Mr. Witherow to pay off his entire indebtedness in four annual payments, with 6 per cent. interest, was received with much favor by his creditors, and in all probability will be adopted. However, it was deemed wise by those present to appoint a committee to investigate the statements of assets and liabilities made by Mr. Witherow. This committee is composed of Wharton McKnight, proprietor of the Anchor Foundry and Machine Company, Pittsburgh, Pa., Geo. B. Berger, Raney & Berger Iron Company, New Castle, Pa., and H. M. Atwood of Atwood & McCaffrey, Pittsburgh, Pa. This committee will examine the statement submitted by Mr. Witherow, and will make a report in writing to the creditors as to the best course to pursue in the matter of accepting the proposition made by Mr. Witherow. This report will be made at another meeting of creditors to be held in the Monongahela House, Pittsburgh, Pa., December 2, at 2 p.m. The large works of Mr. Witherow at New Castle, Pa., are in full operation, and have a number of important contracts on hand. In all probability the proposition of Mr. Witherow will be accepted by the creditors, and there will be no interruption whatever of operations at the works. All the money due the workmen at the time of the suspension of Mr. Witherow has been paid by A. W. Thompson, who was appointed receiver. In the statement of assets and liabilities of Mr. Witherow, which appeared in *The Iron Age* of last week, occurred a slight error. The mortgage due Mr. Chas. Lockhart is for $75,000, with one year's interest, amounting to $4500, instead of a mortgage of $750, and one year's interest of $45, as was printed.

The exports of the United States in October exceeded in value $100,000,000, for the first time in the history of the country for any month. The actual amount was $102,933,296, exceeding by $4,000,000 the amount for the same month last year, which was in turn the largest by far ever known for that month in any previous year. The excess of exports over imports, moreover, was $36,138,057, against $25,778,367 for the same month last year, while the largest excess ever known was about $37,000,000 in December, 1890, and December, 1889.

WORLD'S FAIR NOTES.

Recommendations as to Awards.

Director-General Davis has reported to the Committee on Awards that 142 juries, embracing 669 jurors or judges, would be necessary to distribute the premiums and medals on exhibits at the exposition. This report is given to the Committee on Awards in order that it may fix up a statement to be presented to Congress asking for an appropriation to cover this branch of World's Fair business. In addition to the expense of the jurors a large outlay will be incurred in the preparation of bronze medals and diplomas, both of which have been decided upon by the National Commission. Chairman Williams of the Subcommittee on Awards estimates that the appropriation necessary for all purposes would be less than $500,000.

The report is substantially as follows:

If the jury of awards is organized by July 1 its work can be completed substantially by August 10, and the work of revision finished by September 1. In order to do this it will be necessary to employ a large corps of clerks by May 1, 1893, to make preliminary preparations for the juries of awards. The number of jurors required I estimate at 669, divided as follows: Department of Agriculture, 9 juries and 63 judges; Horticulture, 10 juries, 50 judges; Live Stock, 53 juries and 169 judges; Fisheries, 5 juries, 25 judges; Mines and Mining, 12 juries, 60 judges; Machinery, 6 juries, 36 judges; Transportation Exhibits, 4 juries and 32 judges; Manufactures, 13 juries, 65 judges; Electricity, 5 juries, 35 judges; Fine Arts, 8 juries, 40 judges; Liberal Arts, 9 juries, 71 judges; Ethnology, 3 juries, 18 judges, Forestry, 3 juries, 15 judges.

It is also recommended that a special jury be drawn from the regular group of juries to give an award to the exhibit showing the best and most satisfactory installation in each of the 13 departments, and that no juries be organized for the classes comprising agricultural machinery and musical instruments, as the prospective exhibitors in these classes have declared against awarding medals in these divisions of the departments. Each of the 500 judges, outside of the Department of Live Stock, should be paid $6 a day for their services, which are not to exceed 40 days, and the 169 judges in the Live Stock Department should be paid the same rate, their services being limited to ten days. This payment of $6 per day is made in lieu of expenses, and not as salary.

We should fix the standard of character and appointment for judges of the World's Columbian Exposition so high that an appointment to the Board of Judges will be a personal distinction, equal at least to that honorary membership given by the great associations of art, literature, science and industry of this or of any other country.

He believes that the honor conferred in selecting a man for judge of the departments is considered far above any pecuniary compensation, and will enable the exposition to get the services of many men who could not be secured for salary. He does not even recommend the payment of traveling expenses, for the reason that the honor should not be conferred upon any person who does not feel enough interest to visit the exposition on his own account, without reference to his probability of being appointed upon one of of the juries. Colonel Davis believes that $130,000 will be enough to pay judges. He recommends that artists of the United States be invited to submit medals and drawings for the medals, and that $500 be paid for the best design and $250 each for the next two best designs. The same prizes, he recommends, should be given for the diplomas. He asks the Awards Committee to learn whether the Director of the Mint will strike medals of award in the Government Building on the exposition ground, something of that kind having been suggested to the Treasury officials. Colonel Davis believes that an arrangement to that effect would greatly add to the value of the medals as mementos of the fair. The same recommendation is made in the report in regard to the printing of the diplomas, which he thinks could be struck off under the direction of the Bureau of Engraving and Printing of the Treasury Department. Both medals and diplomas, he thinks, should be protected by United States laws, the same as is provided for coins and legal tenders. He recommends, further, that the policy of the exposition should be conservative in respect to the number of awards, and that the authorities should study how they will be able to limit rather than enlarge the number. The special prizes and premiums offered by individuals and associations interested in various classes of exhibits he believes should be disposed of in the same way and in accordance with the same rules and regulations governing the medals and awards.

Rules and Regulations.

The following rules and regulations have just been issued by Director General Davis for the government of exhibitors at the World's Columbian Exposition.

Rule 1. Exhibitors will not be charged for space. A limited amount of power will be supplied gratuitously. This amount will be settled definitely at the time space is allotted. Power in excess of that allowed will be furnished by the exposition at a fixed price. Demands for such excess must be made before the allotment of space.

Rule 2. Any single piece, or section, of any exhibit of greater weight than 30,000 pounds will not be accepted if machinery is required for its installation.

Rule 3. Exhibitors must provide, at their own expense, all showcases, cabinets, shelving, counters, fittings, &c., which they may require, and all countershafts, pulleys, belting, &c., for the transmission of power from the main shafts.

Rule 4. Exhibitors will be confined to such exhibits as are specified in their application. When the allotment of space is definitely made, exhibitors will be notified of their allotment of space and its location, and will be furnished with a permit to occupy such space, subject to the general rules and regulations adopted for the government of the exposition and the special rules governing the department in which their exhibit will be made.

Rule 5. Special rules will be issued governing each department and the sale of articles within the buildings or on the grounds.

Rule 6. Decorations, signs, dimensions of cabinets, shelving, counters, &c., and the arrangement of exhibits must conform to the general plan adopted by the Director-General.

Rule 7. Reasonable precautions will be taken for the preservation of exhibits, but the World's Columbian Exposition will not be responsible for any damage to, or for the loss or destruction of, any exhibit, resulting from any cause.

Rule 8. All packages containing exhibits indended for the several departments must be addressed to the "Director-General, World's Columbian Exposition, Chicago, Illinois, U. S. A." In addition the following information must be written on the outside of each package:

(*a*) Department in which exhibit is to be installed.

(*b*) The State and Territory from which the package comes.

(*c*) Name and address of the exhibitor.

(*d*) The number of the permit for space.

(*e*) Total number of packages sent by the same exhibitor. The serial number must be marked on each package, and a list of the contents inclosed in each package. Freight must be prepaid.

Rule 9. Favorable terms will be arranged by which exhibitors may insure their own goods. Exhibitors may employ watchmen of their own choice to guard their goods during the hours the exposition is open to the public. Such watchmen will be subject to the rules and regulations governing employees of the exposition.

Rule 10. The expense of transporting, receiving, unpacking and arranging exhibits, as well as their removal at the close of the exposition, shall be paid by the exhibitor.

Rule 11. If no authorized person is at hand to take charge of exhibits within a reasonable time after arrival at the exposition buildings, they will be removed and stored at the cost and risk of whomsoever it may concern.

Rule 12. The installation of heavy articles requiring foundations should by special arrangement begin as soon as the progress of the work on the buildings will permit. The general reception of articles at the exposition buildings will commence November 1, 1892, and no article will be admitted after April 10, 1893. Space not taken possession of April 1, 1893, will revert to the Director-General for reassignment.

Rule 13. If exhibits are intended for competition it must be so stated by the exhibitor or they will be excluded from examination for award.

Rule 14. The chief of each department will provide cards of uniform size and character, which may be affixed to exhibits, and on which will be stated only the exhibitor's name and address, the name of the object or article exhibited and its catalogue number.

Rule 15. Articles that are in any way dangerous or offensive, also patent medicines, nostrums and empirical preparations whose ingredients are concealed, will not be admitted to the exposition.

Rule 16. Exhibitors' business cards and brief descriptive circulars only may be placed within such exhibitors' space for distribution. The right is reserved by the Director-General to restrict or discontinue this privilege whenever, in his judgment, it is carried to excess or becomes an annoyance to visitors.

Rule 17. The chief of each department, with the approval of the Director-General, has the power to order the removal of any article he may consider dangerous, detrimental to or incompatible with the object or decorum of the exposition or the comfort and safety of the public.

Rule 18. Exhibitors will be held responsible for the cleanliness of their exhibits and the space surrounding the same. All exhibits must be in complete order each day at least 30 minutes before the hour of opening. No work of this character will be permitted during the hours the building is open to the public. In case of failure on the part of any exhibitor to observe this rule the chief of the department may adopt such means to enforce the same as circumstances may suggest.

Rule 19. The removal of exhibits will not be permitted prior to the close of the exposition.

Rule 20. Sketches, drawings, photographs, or other reproductions of articles exhibited, will only be allowed upon the joint assent of the exhibitor and the Director-General; but general views of portions of the interiors of the buildings may be made by the approval of the Director-General.

Rule 21. Immediately after the close of the exposition, exhibitors must remove their effects, and complete such removal before January 1, 1894. Goods then remaining will be removed and disposed of under the direction of the World's Columbian Exposition.

Rule 22. An official catalogue will be published in English, French, German and Spanish. The sale of catalogues is reserved exclusively by the Exposition Company.

Rule 23. Each person who becomes an exhibitor thereby agrees to conform strictly to the rules and regulations established for the government of the exposition.

Rule 24. Communications concerning the exposition, applications for space, and negotiations relative thereto, should be addressed to the "Director-General, World's Columbian Exposition, Chicago, Illinois, U. S. A."

Rule 25. The management reserves the right to construe, amend, or add to, all rules and regulations, whenever it may be deemed necessary for the interest of the exposition.

The Traveling Sidewalk.

The traveling sidewalk invented by Max E. Schmidt, a sample of which has been erected on the exposition grounds, is attracting considerable attention among engineers, numbers of whom have been invited to inspect it in operation. It consists of an elevated series of continuous sidewalks, parallel and level, and so arranged that the first moves at a slow rate of speed, and each successive one at a speed double that of the preceding. This is accomplished by applying the law of mechanics that the circumference of a wheel moves at twice the velocity of its axle. The first moving walk extends out from the axles of truck wheels which move upon a fixed track. Beneath the second platform are flexible steel tracks which fit upon the circumferences of the first wheels and cause the platform to move forward at twice the rate of speed as that attained by the platform fixed to the axles. The series may be increased by further application of the principle. The motive force is supplied by electric motors attached to the trucks and situated several hundred feet apart. The electric current is supplied by the ordinary power dynamo.

The plan of the invention is to elevate the walks above the surface of the street after the fashion of the ordinary elevated

railroad. The weight, however, is reduced to a minimum, and the entire structure, it is claimed, can be supported by a single series of steel posts. The stairways to the walk are placed at short intervals in the block, and an automatic fare collector at the foot of each approach does away with the regular conductor. Once upon the stationary platform extending along the entire side of the walk the passenger can step upon the slowly moving walk, thence upon the next, and finally upon the third, which, according to the present calculation, will move constantly at the rate of 9 miles an hour.

The sample walk now in operation at the World's Fair grounds is 900 feet in length and extends in a circle. It has been built with a view to obtain a permit from the World's Fair directors for the operation of a walk 3½ miles long and extending entirely around the grounds during the fair.

The Committee of Awards.

The Committee of Awards held a three-day session in the city of Washington, last week, and decided to ask Congress for an appropriation of about $500,000 to pay the premiums and defray the expense of jurors. The board finds it will have an exhibit space to care for more than twice as great as that in the Paris Exposition, and that probably twice as many jurors will be necessary. It will be observed that the board greatly exceeds the estimate of the number of jurors made by Director-General Davis. At the Paris Exposition foreign jurors were paid $1000 and other jurors $600.

The expense of making dies, preparing medals and issuing diplomas is considerable. It is thought that it may cost from $2 to $4 each to prepare the certificates of merit or diplomas, or whatever they may be called, and that there may be possibly 100,000 of these.

The grouping of the exhibitors and jurors has not yet been perfected in detail. The Committee of Awards is essentially national and international in its character, and the European exhibitor will receive by the approval of this committee a diploma with the authority of the United States

Another subject which the committee has been called upon to consider is the reduction of the number of groups from the precedents of those which have been formed for other expositions, and which are believed to be too numerous.

The committee is also endeavoring to determine what is the best plan to pursue about securing designs for medals and diplomas, whether by open competition or by money paid to artists for especial work.

The earliest possible action by Congress is desired upon this matter, for the committee expects to appoint in six months the 2000 jurors who will be necessary to do the work.

A Singular Request.

An important order, which was, however, countermanded a day or two later, was issued last week at the request of the architect, to the contractor for the big Manufactures Building. He was instructed to begin at once the erection of a section of the superstructure of that building, and have it ready for the inspection of the Board of Architects when they meet next month. The section was to be 35 feet long and 66 feet high to the roof line, including the cornice of the building and showing two of the columns and one spandrel. It was to be complete, even to the staff work. The object of this temporary work was to show the architects just how the building will look when completed. What will happen if the building does not present the appearance that the architect expects is not known, but the fact that a trial section was asked for is considered by many to be significant.

Financial Matters.

The Finance Committee has been endeavoring to fix up a budget report for next year. It has spent several sessions in considering the subject, but has found it could not improve on the report made last spring as to the estimate of resources and expenses which will be entailed in carrying on the exposition. The budget report of last spring showed that something over $17,000,000 would be necessary to make an exposition such as the Board of Directors has contemplated.

Inasmuch as the Finance Committee could not see where any saving could be affected without injuring the fair to a large extent, it was thought that the loan of $5,000,000 by Congress would be almost a necessity. Meanwhile the committee is figuring upon a line of action in accordance with the supposition that a loan will not be granted by Congress.

Messrs. Gage, Burnham and Peck have spent a great deal of time considering the matter, and one result of the conferences is the assurance that 50 cents will be the price of admission to the World's Fair.

Rules for Machinery Hall.

Rules for the guidance and government of intending exhibitors in the Department of Machinery were issued by Chief Robinson on the 20th inst. The regulations, which are official and approved by Director-General Davis, are as follows:

Rule 1. Exhibitors must be manufacturers or producers of machinery and not dealers only.

Rule 2. Exhibitors, or such agents as they may designate shall be responsible for the receiving, unpacking and arrangement of objects, as well as for their removal at the close of the exposition.

Rule 3. No person can exhibit in another one's space without express permission of the head of the department.

Rule 4. No exhibitor will be permitted to erect or arrange his exhibit in a way to obstruct the light, or occasion inconvenience or disadvantageously affect the display of other exhibitors.

Rule 5. No machinery on exhibition will be allowed to run longer than is necessary for that purpose, except by special permission of the chief of the department.

Rule 6. Steam pressure supplied will be 150 pounds per square inch above the atmosphere. Exhibitors requiring a lower pressure can obtain it by using a reducing valve.

Rule 7. The line shafting will be placed 16 feet from the center of shaft to floor of building, unless otherwise decided, in which case due notice will be given. Size and relative position of shafting to space allotted will be shown on permit.

Rule 8. The line shafting will make 120 and 240 revolutions per minute.

Rule 9. Driving pulleys on main line of shafting must be supplied by exhibitors, and must be in halves and limited to 36 inches diameter. They must be secured in a manner that will not weaken the shaft, and be subject to the approval of the chief of the department.

Rule 10. The main lines of steam, water and sewer pipes will be laid by the Construction Department, but all connecting pipes, valves, &c., will be supplied by the exhibitor.

Rule 11. No steam or water pipes will be allowed to cross over passageways, except as specially provided for in Group 68, Class 403.

Rule 12. The water pressure will be that due to a head of 200 feet, or a pressure of about 86 pounds per square inch.

Rule 13. The chief of department will have care and supervision of the main shaft, but all gear supplied by exhibitors will be under their care. They will also select persons to attend to their machinery, who alone will be allowed to operate it.

Rule 14. Exhibitors of steam engines, boilers, steam pumps, machine tools, shafting, separators, feed-water heaters, steam traps, &c., who desire to offer their exhibits, or a portion thereof, for use in the department, should send in their application for space, or otherwise notify the head of the department, as soon as possible.

Rule 15. Exhibitors furnishing machinery, such as engines, boilers, &c., for the use of the department, may select their own men to operate them; their wages will be fixed and paid by the exposition company.

Rule 16. The Exposition Company will defray the necessary expenses of exhibitors loaning their machine tools, &c., for use, beyond that which they would have incurred as exhibitors simply, wear and tear excepted.

Rule 17. Fire engines entered for exhibition, offered and accepted for use, will be properly cared for and furnished with fuel free of expense.

Rule 18. All the platforms, counters, ornamental partitions, showcases and appurtenances of approved design, must be erected at the expense of the exhibitor, and shall not exceed the following dimensions without special permission of the chief of department: Showcases, 15 feet above the floor; counters, 2 feet 10 inches above the floor on the side next to passageway; platforms, 1 foot above the floor; partitions of various hights, not exceeding 15 feet, of approved design, may be erected in certain parts of the building.

Rule 19. All exhibits of machinery in motion must be inclosed by a railing of uniform hight of 2 feet 6 inches, the railing to come within the space. All designs of railing, showcases and signs must be submitted to the chief of department for approval. No signs will be allowed to extend over passageway, nor will signs of muslin, linen, canvas or paper be permitted.

Rule 20. No fire will be allowed in Machinery Hall except by special permission of chief of department. Not more than a day's supply of oils and other inflammable material will be permitted in the building, but a suitable place will be provided for the storage of the same.

Rule 21. In every case applicants for space are requested to give timely notice if they decide not to exhibit.

Rule 22. Permits will be issued by the chief of department to bring in raw material required for the successful operation of certain exhibits, and such articles as may be required by concessions and privileges before 15 minutes of the opening of the exposition in the morning. Also for the removal of such articles and products as come within the regulations.

Rule 23. The location of exhibits in Machinery Hall will be indicated by rows of columns and the number of the nearest column in a row. The rows will be lettered A, B, C, D, &c., from the south side, and the columns numbered 1, 2, 3, &c., from the east end. Example: "Exhibit No. — B, 71."

Brevities.

A commission to visit the countries of Southern Europe has been appointed by Director-Gen. Davis. It comprises Vice-President Thomas B. Bryan, H. N. Higinbotham of Chicago, ex-Senator Thomas F. Bayard and James Hodges of Baltimore.

William Harley & Son of Chicago were awarded the contract for building the Illinois State Building. The contract for statuary was not let. The Illinois Board wishes to obtain sketches of groups from sculptors before awarding the contract for this work. Seventeen thousand and nine hundred dollars are to be expended on this work.

Chief Skiff of the Department of Mines and Mining has returned from Denver, where he attended the session of the National Mining Congress. There were present nearly 500 delegates, representing 38 States. Chief Skiff secured the adoption of a set of resolutions heartily indorsing, by the National Mining Congress, the World's Fair enterprise and pledging the hearty and full sympathy and support of the congress to the exposition.

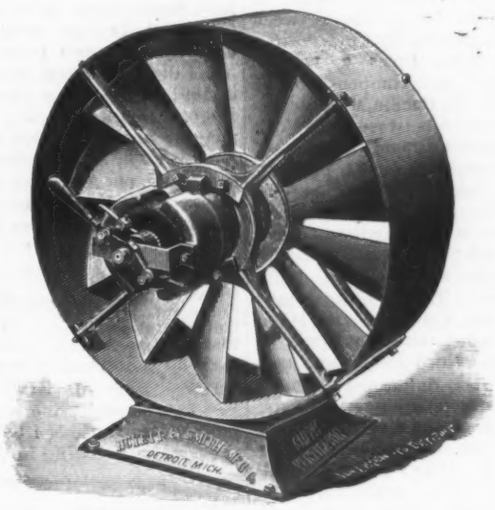
It was announced that the Managing Committee of the Polytechnic Institute of London is perfecting the details of a series of special trips to the exposition. The programme of transatlantic journeys is intended particularly for workingmen and others whose means will not permit their visiting the United States under ordinary circumstances. Steamers have already been engaged, and the tickets provide for six days' stay in Chicago.

The State Supreme Court of California has rendered a decision declaring the law appropriating $300,000 for a California exhibit at the World's Fair valid.

A contract was given Armington & Sims of Providence, R. I., for a 21 x 18 inch high-speed automatic engine.

Electrically Driven Ventilating Fan.

The Huyett & Smith Mfg. Company of Detroit, Mich., have recently placed on the market a ventilating fan driven by an electric motor. As will be seen by the accompanying engraving, the motor is carried by the frame or spider of the fan, and the shaft of the motor is extended and forms the shaft for the fan. The extreme simplicity of this arrangement, the fact that there is really but one moving part, and that the machine is complete in all details as it stands, combine to make the arrangement one having decided advantages. It is evident that the fan can be placed in any desired position, being held by the bolts passing through the base plate. These fans are kept in stock in all sizes capable of furnishing from 6000 to 40,000 cubic feet of air per minute. They can be run at any desired speed.



ELECTRICALLY DRIVEN VENTILATING FAN.

Recent Treasury Department Decisions.

DRAWBACK ON WIRE MADE FROM STEEL BARS.

Collector of Customs, Suspension Bridge, N. Y.—SIR: In reply to your letter of the 25th ult., the department has to inform you that the allowances of wastage specified in synopsis 7702 for wire made from imported steel bars are deemed sufficient in the case of wire made from steel billets. You are therefore authorized to compute the drawback on the wire in question in the same manner as if it had been produced from bars.

Respectfully yours,
O. L. SPAULDING, Acting Secretary.
TREASURY DEPARTMENT, September 4, 1891.

DRAWBACK ON TIRES AND RETAINING RINGS OF LOCOMOTIVES.

Collector of Customs, Providence, R. I.—SIR: On the exportation of locomotives built by the Rhode Island Locomotive Works of Providence, R. I., in the construction of which certain imported tires and retaining rings have been used, a drawback will be allowed equal in amount to the duty paid on said tires and rings less the legal deduction of 1 per cent.

Respectfully yours,
O. L. SPAULDING, Acting Secretary.
TREASURY DEPARTMENT, September 4, 1891.

DRAWBACK ON CORRUGATED STRAP AND T HINGES.

Collector of Customs, Boston, Mass.—SIR: On the exportation of corrugated strap and T hinges manufactured by the Stanley Works of New Britain, Conn., in part from imported steel billets, a drawback will be allowed equal to the duties paid on the imported steel used in the manufacture, less the legal deduction of 1 per cent. The quantity of such imported steel shall be determined by adding to the net weight of the several classes and sizes exported the following percentages:

For class 935, size 4 inches, $16\frac{5}{10}$ per cent.; for class 935, size 5 inches, 12 per cent.; for class 935, size 6 inches, $6\frac{5}{10}$ per cent.; for class 935, size 8 inches, $6\frac{5}{10}$ per cent.; for class 935, size 10 inches, $3\frac{5}{10}$ per cent.; for class 937, size 5 inches, $6\frac{5}{10}$ per cent.; for class 937, size 6 inches, $11\frac{5}{10}$ per cent.; for class 937, size 8 inches, 4 per cent; for class 937, size 10 inches, $7\frac{5}{10}$ per cent.

The drawback entry shall show separately the number of hinges of each class and size and the net weight of the same. The manufacturer's affidavit on the entry must, in addition to the usual averments, show that the hinges are manufactured as described in the sworn statement (Exhibit A) dated May 29, 1891.

Respectfully yours,
O. L. SPAULDING, Acting Secretary.
TREASURY DEPARTMENT, September 10, 1891.

DRAWBACK ON SEAMLESS COPPER BOILER TUBES.

Collector of Customs, Philadelphia, Pa.—SIR: In accordance with the recommendation contained in your letter of July 13 last, and the report of Special Agent Marcus Hanlon, submitted therewith, you are hereby authorized to allow for the imported seamless copper boiler tubes used in the construction of locomotives built by the Baldwin Locomotive Works, of your city, upon due exporation of such locomotives, a drawback equal to $99\frac{3}{10}$ per cent. of the duty paid on the imported tubes less the legal deduction of 1 per cent. Respectfully yours,
O. L. SPAULDING, Acting Secretary.
TREASURY DEPARTMENT, September 14, 1891.

DRAWBACK ON STEEL CAM SHAFTS.

Collector of Customs, San Francisco, Cal.—SIR: On the exportation of steel cam shafts (for mining-stamp mills), manufactured by the Golden State and Miners' Iron Works of San Francisco, Cal., from imported round steel bars, a drawback will be allowed equal in amount to the duty paid on the imported material used less the legal deduction of 1 per cent. The quantity of such material shall be determined by adding to the net weight of the exported article 10 per cent. of such weight. Respectfully yours,
O. L. SPAULDING, Assistant Secretary.
TREASURY DEPARTMENT, September 17, 1891.

DRAWBACK ON GALVANIZED WIRE AND STAPLES.

Surveyor of Customs, St. Louis, Mo.—SIR: The department is in receipt of your letter of the 8th inst., transmitting the application of the St. Louis Wire Mill Company, of St. Louis, Mo., for allowance of drawback on 474 spools of galvanized wire and 20 kegs of galvanized staples "manufactured from imported wire rods and from spelter" and exported to Guaymas, Mexico.

If proper entry was made when the merchandise in question was laden for exportation or for transportation and exportation, and all other action required by the regulations of November 15, 1890, has been taken, such entry may be liquidated under the provisions of synopsis 7702 of August 17, 1886, relative to "wire, galvanized or ungalvanized," and "on articles made from such wire."

Respectfully yours,
O. L. SPAULDING, Assistant Secretary.
TREASURY DEPARTMENT, September 18, 1891.

DRAWBACK ON BOILER-PLATE SHEARINGS.

Collector of Customs, Boston, Mass.—SIR: On the exportation of nails and tacks, manufactured by Stevens & Willis of South Braintree, Mass., wholly from imported boiler-plate shearings, a drawback will be allowed equal in amount to the duty paid on the imported material used less the legal deduction of 1 per cent.

The quantity of such material shall be determined by adding to the net weight of the exported article 7 per cent. of such weight. Respectfully Yours,
O. L. SPAULDING, Assistant Secretary.
TREASURY DEPARTMENT, September 18, 1891.

DRAWBACK ON WIRE NAILS.

Collector of Customs, San Francisco, Cal.—SIR: On the exportation of wire nails, manufactured from imported steel wire rods by the California Wire Works, of San Francisco, Cal., a drawback will be allowed equal in amount to the duty paid on the imported rods used less the legal deduction of 1 per cent. The quantity of rods so used shall be determined as prescribed by the Department (August 22, 1887, S. 8412) in case of similar articles manufactured by the Brooklyn Wire Nail Company, by adding to the net weight of the exported article 7 per cent. of such weight. Respectfully Yours,
O. L. SPAULDING, Assistant Secretary.
TREASURY DEPARTMENT, September 18, 1891.

DRAWBACK ON VICTOR GRATERS.

Collector of Customs, New York.—SIR: On the exportation of Victor graters, manufactured by David Block of New York City from imported tin plates, a drawback will be allowed equal in amount to the duty paid on the imported material used less the legal deduction of 1 per cent. The quantity of such material shall be determined by adding to the net weight of the exported article 15 per cent. of such weight. Respectfully yours,
O. L. SPAULDING, Assistant Secretary.
TREASURY DEPARTMENT, September 19, 1891.

IRON RECOVERED FROM A WRECK OF A VESSEL.

Frank Wooster, Grand Manan, New Brunswick—SIR: In reply to your letter of the 14th inst., you are informed that, under the provisions of Article 428 of the General Regulations of 1884, the parties intending to recover old iron from the wreck of the vessel stated by you to have been sunk in the waters of the United States since 1885, near Machias Isle, and to dispose of such iron in the United

States without entry or payment of duties, should submit to the Collector of Customs at Machias, Maine, a statement of the facts, and an application for permission to introduce the recovered iron into his district; whereupon the Collector will report the case to the Department for such instructions as may appear to be necessary.

Respectfully yours,
O. L. SPAULDING, Assistant Secretary.
TREASURY DEPARTMENT, September 25, 1891.

The Valley Coke Rate.

A final decision has been made by the trunk railroads upon the request of the iron manufacturers of the Mahoning and Shenango valleys for a reduction of the freight rate on coke from $1.35 to $1.15 a ton. It will be remembered that the matter has been at issue for more than a year, and that the long shut-down last winter was on account of it. When the furnace operators resumed they had been denied their request, but ever since they have been keeping up the agitation in hopes that the railroads would finally reconsider. It is claimed that the valleys are unjustly discriminated against in favor of Pittsburgh and Chicago.

The following correspondence explains the situation, together with the views of the respective interests:

B. & O. R. R. Co.,
OFFICE OF THE VICE-PRESIDENT,
BALTIMORE, November 6, 1891.

Subject: Rate on coke to the valleys:

H. O. Bonnell., Esq., President Mahoning and Shenango Iron Manufacturers' Association, Youngstown, Ohio:

DEAR SIR.—After your departure this morning the desire of your committee for a reduction in the coke rate to the valleys was very fully considered and discussed by the railroad representatives present, and the disposition of all to comply with the request of the representatives from the valleys was very manifest. If it had been merely a question affecting your district only the action would undoubtedly have been favorable, but it was the opinion that the coke rate could not be touched for one locality without affecting the rates for all localities. The session was much prolonged after your departure, and, having viewed the question in all its aspects, the conclusion was unanimously, but reluctantly, reached that we could not, in justice to the interests we represent, make the change desired.

Very truly yours,
ORLAND SMITH,
Vice-President.

THE MAHONING VALLEY IRON COMPANY,
YOUNGSTOWN, OHIO, November 16, 1891.

Orland Smith, Vice-President B. and O. R. R. Company, Baltimore, Md.:

DEAR SIR.—Your letter of November 6 was received this morning, in which you give us the disappointing information that our request for a reduction in coke rates to the valleys has been finally refused. We can only wait for time to indicate the justice of our request, and from present appearances this time cannot be far distant. Very truly yours,
H. O. BONNELL.
President Mahoning and Shenango Valley Iron Manufacturers' Association.

Trial of an Electric Locomotive.—An interesting and successful trial of an electric locomotive designed and built by the Thomson-Houston Motor Company, for hauling freight cars, was made at the company's works, at West Lynn, last Saturday. The machine was built for the Whitin Machine Company of Whitinsville, Mass., to transport freight cars from the Providence and Worcester Railroad to their works—a distance of 2½ miles—and is the first one built in this country for a similar purpose. It is nearly square, and all the machinery is below the platform between the axles, of which there are two. Its total weight is 43,000 pounds, and it is rated at 100 horse-power. It was intended to build a machine that would draw two loaded cars, but the machine drew six such cars, weighing 163 tons, with great ease on a curve and up a 3 per cent. grade. It might have developed more power, but there were no more loaded cars at hand.

The Postal Subsidy Bids.

Postmaster-General Wanamaker has officially announced the acceptance of bids for carrying the United States mails on ocean routes in accordance with the act of March 3, 1891. The awards are as follows: To Wm. H. T. Hughes of New York City, service between New York and Buenos Ayres, Argentine Republic, touching at Montevideo, Uruguay, once in three weeks; vessels of the second class, compensation $2 per outward mile. To New York and Cuba Mail Steamship Company, service between New York and Tuxpan, Mexico, by Havana, Progreso and Tampico, and returning by Vera Cruz, Frontero, Progreso and Havana, once a week; vessels of the third class, compensation $1 per outward mile. To New York and Cuba Mail Steamship Company, service between New York and Havana once a week; vessels of the third class, compensation $1 per outward mile. To John B. Clarke of Chicago, Ill., service between Galveston and Laguayra, Venezuela, returning by Curacoa, Savanilla, Carthagena and Colon, three times a month; vessels of the fourth class, compensation two-thirds of $1 per outward mile. To Messrs. Boulton, Bliss & Dallett of New York City, service between New York and Laguayra, by Curacoa and Puerto Cabello, three times a month; vessels of the third class, compensation $1 per outward mile. To Pacific Mail Steamship Company, service between New York and Colon three times a month; vessels of the third class, compensation $1 per outward mile. To same company, service between San Francisco and Panama, touching at certain intermediate ports, three times a month; vessels of the fourth class, compensation two-thirds of a dollar per outward mile. To same company, service between San Francisco and Hong Kong, by Yokohama, once in every 28 days; vessels of the third class, compensation two-thirds of a dollar per outward mile. These contracts are for ten years, with the exception of the service between Galveston and Laguayra, which is for five years. The service of the Pacific Mail will begin January 1, 1892, while the New York and Laguayra service will begin March 1, 1892, and that between Galveston and Laguayra on May 1, 1892. The service between New York and Havana will begin February 1, 1892, and between New York and Tuxpan, February 1, 1892, and that between New York and Buenos Ayres December 1, 1894.

The results of the Postal Subsidy bill for the encouragement of steamship enterprise do not promise all that had been looked for by the authors and advocates of the measure. But a beginning has been made which may demonstrate the feasibility of the system. The *Tribune* takes a hopeful view, remarking as follows: "The chief gain is the establishment of a line of American steamers with the Plate countries. The only other new enterprise is the Galveston service with Venezuelan and Colombian ports. These two lines will involve the construction of six new ships, three of the second class and three of the fourth class. The bids for the existing services between New York and Cuba, Mexico and Venezuela will make two more ships necessary. The Pacific Mail bids which have been accepted will require in the course of a few years the building of six or eight new vessels. In the aggregate about 16 steamers, three of them of 5000 tons and 16 knots speed, will probably be added to the commercial marine in consequence of the recent legislation. The Plate service will be the most substantial gain."

As an auxiliary to the reciprocity system recently inaugurated at Washington closer and regular steamship communication under the independent control of the American flag is more than ever demanded.

It is probable that American shipyards will at once begin the building of some of the vessels, and that important contracts for plates, forgings and structural material will soon be given out.

Consumption of Cotton.

Speaking of the cotton consumption, the *Chronicle* brings together the results for Europe, India and the United States, always in 400-pound bales, showing that the world's consumption in 1890–91 amounted to 12,896,328 bales, against 12,043,293 in 1889–90, 11,394,880 in 1888–89, 10,938,670 in 1887–88 and 10,468,890 in 1886–87. As the *Chronicle* remarks: "The above demonstrates with how great regularity and how decidedly the consumption of cotton has developed throughout the world. The only retrograde movement was in 1883–84 and 1884–85, but since 1884–85 the advance has been rapid, until now the consumption reaches an aggregate of 12,896,328 bales of 400 pounds each, an increase since 1878–79 of over 72 per cent. The gains during a period of 13 years in the various countries have been: Great Britain, 49 per cent.; Continent, 74¼ per cent.; United States, 65¾ per cent., and India, 340½ per cent. Mr. Ellison estimates that the world will in 1891–92 need for its consumption 10,388,000 bales of 463 pounds average weight, making 12,024,000 bales of 400 pounds each, and he bases his estimate of supply on an American crop of 7,550,000 bales. He estimates the number of spindles in Europe, America and India during 1891 as follows:

Spindles	1891.	1890.
Great Britain	44,750,000	43,750,000
Continent	25,150,000	24,575,000
United States	14,781,000	14,550,000
East Indies	3,351,000	3,270,000
Total	88,032,000	86,145,000

"This shows an increase in the spinning power of the world of 1,887,000 spindles, all the countries sharing in the excess."

The Philadelphia Natural Gas Company of Pittsburgh last week struck an immense gas well in the McGahey field, located in Strabane Township, Washington County, Pa. The well is said to have a rock pressure of 850 pounds to the square inch, and is one of the largest wells ever found in this territory. What makes it particularly valuable to the Philadelphia Natural Gas Company is the fact that the new well is situated very close to their new main leading from the West Elizabeth field. The company are now drilling four additional wells in this immediate vicinity, and two of them are expected to be in in about two weeks. Altogether they are drilling 24 wells in different parts of the country and are confident that at least 20 of them will prove to be producers. In this connection we may state that less dissatisfaction has been manifested so far by the consumers of gas in Pittsburgh and immediate vicinity over shortages than for some years past. This is no doubt due in great extent to the fact that the gas company are no longer supplying rolling mills, foundries and other manufacturing plants. This of course leaves a larger supply to be divided among private consumers. The officials of the Philadelphia Natural Gas Company have claimed right along that customers will not experience any shortage in gas during this winter, as they have in previous years, and so far this promise has been carried out, as there has been very little dissatisfaction manifested.

THE WEEK.

The New York Park Commissioners in refusing to remove the elevated railroads from the Battery, say: "The roads have ceased to be an experiment and have been a most wonderful factor in the growth of the city and the convenience of the traveling public."

According to an official estimate, 100,000,000 poods of grain will be needed in Russia from abroad. A Russian pood being 36 pounds, the amount of imports required will be about 1,500,000 tons, according to the foregoing estimate.

The officers of an American steamer arrived in New York from Brazil say that fully 200 vessels at Santos were unable to discharge their cargoes, and that at Para and Buenos Ayres merchandise encumbered the water front, there being no means of removing it to its final destination. The new president, Peixotto, being now in power, and Fonseca having peaceably withdrawn, it is hoped that confidence will soon be restored. Congress will meet December 16

The monetary crisis in Russia is so severe that the Government has abandoned the proposed Industrial Exhibition to have been held in Odessa in 1893.

One of the improvements in the Philadelphia water works, contemplated for next year, is the construction of three new pumps with an aggregate pumping capacity of 40,000,000 gallons per day, at a cost of about $300,000. The present daily pumping capacity is 178,000,000 gallons, which the proposed additions, together with works now in progress, will increase to 235,000,000 gallons. The water supply is claimed to be four times greater than that of New York.

The removal by Germany of the bounty on high wines and the high price of grain abroad has opened up both the British Isles and the Continent to the American product, and a heavy export trade in that article is already the result. Within a few days 10,000 barrels have been purchased in Chicago to meet this foreign demand.

The Chilian Government invites bids for raising the war ship Blanco Encalada, which was sunk by Balmaceda's torpedo boats in Caldera Bay. Here is an opportunity for the exercise of American engineering skill.

Paper manufacturing in the United States is on an enormous scale. Out of the nearly 4,000,000 pounds of book and news paper turned out daily in the various paper manufacturing localities, almost one-third is made in New York State. Massachusetts comes next with nearly 550,000 pounds, and Wisconsin third with over 400,000 pounds. That is only two kinds of paper, and the pulp mills of this State supply the paper makers of the country with nearly one-half of the pulp they use in getting out paper for use in books and newspapers, or 1,030,000 pounds. Take the whole daily capacity of the mills, including all varieties of paper, from the finest bond paper to the coarsest wrapping paper, and it foots up to the immense amount of almost 15,250,000 pounds. The number of mills is about 1200, and not more than 30 per cent. of them are fitted with steam power, so that they are liable to be interrupted by drought.

The American whale fisheries diminish in importance year by year. The new census returns show that in 1889 the total capital invested in all branches of the industry was $2,081,636, and the number of vessels 101. When compared with the report for 1880 this shows a decrease of 40.94 per cent. in the number of vessels, a decrease of 41.35 per cent. in the total net tonnage, and a decrease of 38.06 per cent. in the value of the vessels and outfits. The total value of the products landed in 1889 was $1,834,551.

The wheat blockade causes a coal famine in some parts of the West.

For a double track road, suited to municipal purposes, Mr. Edison estimates the cost of his newly contrived electric underground system at from $30,000 to $100,000 per mile, not including stations. In Philadelphia, electricity will be introduced on the suburban branches.

In the new treaty of peace between Chili and Bolivia, Chili cedes to Bolivia the free right of commercial transit through the port of Antofagasta, recognizing at the same time the sovereign right that Bolivia has of establishing custom houses on her frontier.

Discoveries of natural gas in Pennsylvania are so frequent of late that those in the business think that if the new fields were properly developed the supply would be more than sufficient to run all the industries in Pittsburgh at coal rates, if not lower.

The German Government has been collecting some statistics relating to the effect of lightning on ships, and the Commission appointed to investigate the subject reports that no case has been recorded of a ship rigged with wire rigging sustaining damage from lightning except in a few instances where a continuous connection had not been made with the hull.

The Diamond Mail Steamship Company has been formed at Boston to re-establish steam communication between Hayti and Boston, and has purchased the American steamer Worcester, which will make monthly trips, commencing next January.

Scranton, Pa., proposes to build a coal palace at the World's Fair.

Mr. Simmons, the author of the resolutions adopted by the Chamber of Commerce on the silver law of 1890, has recently called attention to the anomalous provision of that law by which the Treasury is compelled to buy silver to the amount of 54,000,000 ounces per year, and is not allowed to sell any. He suggests that if the law cannot be repealed, it ought at least to be amended so as to give the Government authority to sell silver at discretion. Piling up silver cannot go on indefinitely.

The Dominion crops are all good. It is probable that the yield of grain in Ontario has never been surpassed, whether taken in the aggregate or on the acreage basis. The wheat crop has averaged 25.7 bushels per acre for fall and 21 bushels per acre for spring, as compared with 19.8 and 12.8 bushels respectively last year, and the total quantity of this cereal harvested is placed at 32,584,426 bushels, or nearly 11,000,000 bushels in excess of 1890, and more than 5,000,000 in excess of the average yield for the past ten years. Oats are a phenomenally heavy crop, averaging 40.8 bushels to the acre, as compared with 28 bushels last year, and giving a return of 75,009,542 bushels, or 22,240,000 bushels over 1890.

St. Louis merchants who want Mexican trade complain of the ruinously low rate from New York resulting from the cut-throat policy of competing lines.

Advocates of a bimetallic basis make slow progress in their efforts to secure an international agreement. A representative of the United States Treasury Department had a conference with M. Bouvier, the French Minister of Finance, who expressed sympathy with the proposal to bring about a common ratio between gold and silver, but stated that he was not willing to take the initiative in the matter. He expressed the hope that England and Germany might be induced to co-operate with France to bring about a conference to effect the desired end.

The first of a series of large mortar batteries in Boston Harbor is approaching completion, and Fort Warren is being reconstructed to mount heavy guns.

The Cuban sugar crop is expected to exceed last year's yield 10 to 15 per cent.

California will ship eastward 5000 carloads of oranges. Plantations are being extended far into Mexico, encouraged by railway communication.

Another failure in Wall street is attributed to speculation in grain. The list now stands: Hutchison, White, Field. The firm of Field, Lindley & Co., whose failure is just reported, are said to have been short in November corn. The worst feature in the case is the alleged rehypothecation of bonds to a large amount.

Five of the largest pulp mills in New York and Canada have been consolidated, with $1,000,000 capital, and their aggregate daily output is estimated at 100 tons of dry pulp.

The Atlantic Ocean is now literally a ferry. In the last three voyages of the steamer Teutonic from New York to Queenstown there has only been an extreme variation of 27 minutes in time. The first trip was made in 5 days, 21 hours, 20 minutes; the second in 5 days, 21 hours, 3 minutes, and the third in 5 days, 21 hours, 30 minutes.

Owners of cotton and wheat have sustained losses due to delay in transportation, caused by blockades, the railroads being unable to handle the crops as fast as received, and several suits for damages have been commenced in Kansas and Arkansas.

Brooklyn's water supply is precarious owing to extensive fractures in the old aqueduct upon which the city is wholly dependent. Chief Engineer Van Buren is authority for the statement that the old aqueduct is broken from end to end. By supporting the parts liable to collapse the works now in use may endure until the new works are completed.

Between 3,000,000 and 4,000,000 bushels of wheat are frozen in at Buffalo or in the canal this side, and another 1,000,000 bushels are blockaded in Lake Superior.

Philadelphia is about to establish the Atlantic Transport Line of steamships, direct to London, to compete with New York and Baltimore. And yet freights for the westward passage are so scarce that steamers in the trade are hauling off.

Arrangements are making to return the escaped convicts in Tennessee to the coal mines in Briceville.

A special train on the Pennsylvania Railroad on Saturday made the trip from New York to Washington in 4 hours and 11 minutes. The time included a stop of five minutes at Gray Ferry to change engines, and a stop of six minutes at Baltimore on account of a bad brake. This does not equal the average speed made by the New York Central's fast train to Buffalo, but it beats all records at Washington.

A representative of the Hawaiian Government has negotiated a treaty at Washington stipulating for free trade between the two countries.

New York builders are in the market for real estate, buying lots for operations in the spring.

A review of the year's work on the Hudson by the different towing and passenger lines shows an advance of nearly 70 per cent. over last year, but the canal season has been unprofitable.

The Iron Age

New York, Thursday, December 3, 1891.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.

Technical Societies and Their Papers.

An incident occurred during the last meeting of the American Society of Mechanical Engineers which touches a subject deeply concerning the members of technical societies, and the much larger number of persons to whom, at long intervals, some particular paper has special value. All our leading technical bodies succeed very well in keeping out of sight the purely commercial aspect of the devices and methods which naturally come up before them. Their members, of whom the majority are professional men, would quickly rebel at any paper which is too broad an advertisement. Primarily the societies are one of the principal means of establishing and hightening professional reputation. They are partial records of the life work, of many of the successes and some of the honorable failures of engineers, and as such are invaluable to the peers of those who contribute the papers and to the younger men who aspire to become their successors.

In a large measure the success of a technical body depends upon the character of the papers read at its meetings and upon the discussions they bring out. Of course the opportunity of making the acquaintance and exchanging verbally professional experience with fellow members is the principal aim followed in their regular gatherings. The latter has been, we take it, a more potent factor in the unparalleled success of the Mechanical Engineers than any other, aided as it is by the fact that its members are professionally keenly interested in the pursuits of one another. The management is ambitious, active and untiring, but so far as its literature is concerned is destined to do more effective work.

There is a great contrast between the methods followed by the American Institute of Mining Engineers and the American Society of Mechanical Engineers. Both have their advantages and their drawbacks. The Mechanical Engineers have an organization more effective in bringing their papers before the meeting in such a way that discussion is promoted. The presentation of topical questions brings out much interesting information, often on the part of men who are ready to talk but cannot be made to write. But it is quite evident that the responsibility of selecting papers is too much divided. We presume that the secretary urges individual members to present the results of their experience, but the acceptance and rejection of any paper rests with the Publication Committee. We do not know to what extent its members make efforts to procure papers. It may occur, therefore, that the chief executive officer invites a member to contribute, and is placed in the embarrassing position of having the paper rejected by the Publication Committee.

In the Institute of Mining Engineers the work of securing papers, of preparing them, and practically of accepting and rejecting them, lies with the secretary. He generally, as we understand it, secures the approval of his council before rejecting a paper, but is given a free hand otherwise. On the whole, this method has worked very well under both the secretaries who have held office, although at times many members have questioned the wisdom of being as liberal as has been the case. We are convinced, however, that an admirably conscientious system of editing has saved the institute from incidents like that which occurred at the last meeting of the Mechanical Engineers.

With so able an officer in charge of the affairs of the American Society of Mechanical Engineers as the present incumbent, it might be well to leave the acceptance and rejection of papers to his judgment, allowing him to call upon any members of the council for co-operation, and in the case of specially delicate matters, appointing a special committee composed of experts on the subject to pronounce a final decision. At long intervals it does happen that an unreasonable member must be suppressed by the whole weight of authority resting with the council, but with the great mass of the papers which enter the transactions of our technical societies their secretaries are fully able to cope, so that they should be the persons directly responsible to the society, and not a body which has little experience because its *personnel* changes frequently.

In his annual report, C. E. Mitchell, Commissioner of Patents, again calls attention to an abuse of long standing, and suggests a remedy. Under the present law the Commissioner of Patents must institute proceedings to determine the question of priority of invention when an application is made for a patent which, in his opinion, would interfere with any pending application or with any unexpired patent. How numerous these interference cases are, and how much delay they involve in the granting of a patent, every one knows who has come before the Patent Office as an inventor. But, unfortunately, in many cases the matter does not end there, since it often happens that a stranger to the proceedings files an application, and, under the law as it now stands, a second interference must follow. These delays have a twofold effect. They often postpone the time when the true inventor comes into the enjoyment of his rights and delay the period when the invention becomes public property. A far more serious result of these long drawn out interferences is, however, referred to by the Commissioner of Patents in the following words: "I am sorry to add that it is currently believed that in some cases new parties enter the field not so much to obtain a patent for themselves as to obstruct and postpone the rights of meritorious inventors." Current belief goes even further. It is asserted that interferences are kept alive in the Patent Office by applications apparently hostile but really friendly to the parties, who seek in that manner to lengthen the life of their monopoly far beyond the limit of 17 years contemplated by the patent law. It is trickery of this character which is giving those who are opposed to the law, some ground to stand upon. The Commissioner of Patents suggests that a party prevailing upon the first proceeding shall be permitted to take his patent, and that subsequent applicants shall contest priority with a patentee, instead of with an applicant.

Western Trade Movements.

The diversion of some of the trade between the East and the West from routes via Chicago to routes via Lake Superior is a fact very well known. We question, however, whether many persons outside of the immediate interests involved appreciate the magnitude of the trade thus diverted. It is stated on excellent authority that the trade of West Superior alone has grown from practically zero four years since to over $50,000,000 per annum now. This represents transfers of merchandise of all kinds from vessels to cars and *vice versa* at the docks of that vigorous young city of the Northwest. Its sister city, Duluth, with which it is contending for supremacy at the head of Lake Superior, has probably handled a still greater value of merchandise of all kinds. The diversion of such an enormous traffic from the lines running further South is such an important matter that it seems almost like a revolution. For it must be borne in mind that the movement has but begun and the future will see steadily increasing shipments via Lake Superior to the rich Nortwest.

It is idle to say that the Chicago routes have not felt the loss of this traffic. They have felt it. Their revenues, which have been barely able to make both ends meet for the past year or so, would certainly have been much greater if the bulk of this business had gone via Chicago. The business of the Chicago routes no longer grow as of yore, in good seasons phenomenally and in bad seasons surprisingly. Their territory is more restricted and their opportunities must be shared with youthful but very lusty competitors.

In the light of these changing conditions it is of interest to note that Chicago promises to gain in other directions what it is losing in through trade from the Northwest. Never before has more activity been displayed in building up the manufacturing interests of the city and its environs than in this year of grace. Subdivisions without number have been opened on the outskirts of the city, with from one to a dozen manufacturing enterprises forming the foundation of each new

settlement. Every railroad running into the city and the several belt lines connecting them are being built up at a remarkable rate with new manufacturing towns, some of which are of ambitious pretentions. Of the new manufacturing companies chartered under State laws, the average for Chicago alone is about four a day. This shows how the movement is growing. Real estate men estimate the increase in the population of the city at from 10,000 to 20,000 per month, caused largely by the removals of workmen and their families from other localities. Greater attention than ever before is now being given to the development of local traffic by these lines, as railroad managers see the advantage to be gained in this way as compared with the uncertain returns from through freight. The enormous crops of the past season will certainly tax the facilities of all the east and west lines this winter and next spring, and for a time may obscure the effects of the competition of the Lake Superior lines with more southern routes. But whenever the movement decreases the change in the trade will again become visible. The benefits then accruing from the stimulation of the manufacturing interests of Chicago and its vicinity will be much more highly appreciated.

The Detroit Waterways Convention.

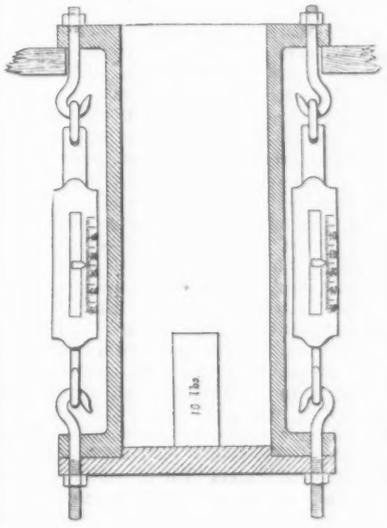
An important waterways convention has been called to meet in Detroit on the 17th inst. The special object of the meeting is to adopt measures to secure a 21-foot channel from Duluth and Chicago to Buffalo, while advocates of a ship canal from the lakes to the ocean will also present their scheme. The Governor of each State bordering on the lakes will be invited to attend and also to appoint five other delegates from his State. Commercial organizations in the cities interested are expected to co-operate. The carrying capacity of lake vessels is now restricted by the shallow channels connecting the lakes, and these must be deepened to meet the needs of the lake lines of transportation, which are every year becoming greater factors in the exchange of commodities between the East and the West. There would seem to be no good reason why the channels should not be deepened by the National Government, which will, of course, be expected to bear the burden of the improvement, as a very large part of the Union is benefited by the cheapening of transportation which has followed the utilization of the natural advantages existing in the chain of great lakes. As to the constructon of a ship canal from the lakes to the ocean there is room for serious differences of opinion, notwithstanding the strong argument in its favor from a military standpoint.

In England old and defective steel rails are utilized as props and frame work in coal pits with good success. The rails are cut into suitable lengths and notched at the ends, so that they can be framed together.

CORRESPONDENCE.

That Bolt Question.

To the Editor: In the article on testing material for Babcock & Wilcox boilers, in your issue for the 19th ult., you say among other things that the bolt for holding hand-hole cover on tube header is subjected to two strains, both tensile, and of course in the same direction. That when steam is brought on this cover the strain on bolt due to screwing down the nut is augmented by just that much. That the steam does increase the strain on both is a generally accepted theory, perhaps, but let us see if it is correct. The force or pressure of the bolt, which is equal to the tensile strain, is exerted in drawing the cover up against the tube header, or in holding two plane surfaces in contact to make a steam-tight joint. It is obvious that the action on the cover is the same as



That Bolt Question.

if an equal force or prssaure were applied from the outside to hold it in contact. Now, if we have a given pressure holding the cover against the header, it is quite plain that any lesser pressure applied to the inside tending to push it away will not necessitate any additional pressure on the outside to keep it in place. For example, suppose that the cover is held against the header with a force of 1000 pounds, if we now apply a force of 500 pounds to the inside of cover, we still have an unbalanced force of 500 pounds holding the cover on. Now, the force on the outside is no greater when we have 500 pounds pushing outward than it was before, when the header resisted the whole force of 1000 pounds, and if this 1000 pounds force was supplied by a bolt, the tension on the bolt would be 1000 pounds, and if the force of the bolt was no greater with the 500 pounds pushing outward than it was without it, it is hard to see how this 500 pounds adds to the tension on the bolt. Of course when the force of the steam equals the force of the bolt, the opposing forces are in equilibrium, and any increase of steam pressure will increase the tension on the bolt. But, when this point is reached, steam will "flow through," and this brings about an entirely different condition of things from those existing with a tight joint. Ordinarily, in making small bolts, it would seem advisable to provide for the fellow-with-a-monkey-wrench, rather than for any steam pressure they would be likely to get, as in order to have tight joints the strain on the bolts due to screwing down the nuts must always exceed the force of the steam pressure. The foregoing may not be clear to all, but to any who think differently, the experiment illustrated in the figure may be of use in throwing some light on the subject. The illustration will show the arrangement sufficiently clear without a description. Suppose the cover to be without weight, and the nuts on bolts screwed down until the spring scales indicate 25 pounds each; then the tension on each bolt will be 25 pounds, and any increase in this tension will be shown by the scales. If any pressure on the upper side of the cover, less than the initial tension already on all the bolts, will increase this tension, then the scales must show it, and if a weight of 10 pounds be placed on cover, the scales would show 30 pounds instead of 25. A little thought will convince any one that an actual experiment would show no such result.

WILLIAM G. SHEPHERD.

The Bar Iron Card.

To the Editor: We note that in your issue of this week you agitate the question of revision of the present iron card. One at least of your readers is of the impression that it would be utterly useless to attempt to make such revision to any good purpose. While, as you intimate, endless departures are made from it in transactions of magnitude there would necessarily be the same variations, no matter what card were devised. This fact has been clearly demonstrated in the efforts of the nail men to secure a card which would hold good for any length of time, or be satisfactory to the makers at large. It has failed in every instance, though they have tried it a half-dozen times since the date of the last iron card. The date of the last iron card is February 2, 1880, the cut nail card February 12, 1890. A card is only a device for governing a certain class of sales. It is convenient, just as a nickel piece is convenient as representing 5 cents. We know that it is not intrinsically worth the money, but it passess as current in transactions of minor importance. The iron and nail cards do the same thing. If one would reflect for a moment, he would realize that it is preposterous to suppose that the status of manufacturers can be regulated by a card. In other words, any one mill which is prepared to make hoop and band iron or small rounds as a specialty will not have its advantages lessened to the smallest fraction by any arrangement of figures on a list, and will just as surely get the business if it wants it. General buying of assorted lots from a mill is very much less in vogue than it used to be, as you yourself set forth.

Do not let us disturb the card. Manufacturers may halve the card if they like, but humane considerations, if nothing else, should prevent it being quartered.

"OLD IRON."

LOUISVILLE, Ky., November 28, 1891.

The Thompson Repeater.

To the Editor: I have read with much pleasure the paper presented by R. W. Hunt before the Society of Mechanical Engineers, entitled "The Evolution of American Rolling Mills." It was very interesting to me, but I must confess I was surprised at the description of the Garrett Rod Mill, the first of which was built by the Cleveland Rolling Mill Company in 1882. I heartily indorse the assertion that "it was destined to play a conspicuous part in the American wire industry," but while this is true, it is undoubtedly a fact that it hardly took its place as the leader in large products till the adoption of the McCallip repeater. I am conversant with the true inwardness of all the experiments tried with repeaters, and I must state that this gentleman was the first to perfect

an automatic contrivance for doubling in the rods.

Again I was astonished to read that the "last and best" repeater was invented by F. G. Tallman. I mail to you with this the papers (the W. F. Thompson patent, October 23, 1888 and reissued June 23, 1891) showing who really was the inventor of the two or more repeater which has done so much to make the Garrett mill "conspicuous in the American wire industry," and has been instrumental in doubling and even trebling its capacity. The output of the Garrett mill with the single repeator was limited by the number of feet that could be passed, singly, through the finishing oval, and it never to my knowledge exceeded 110,000, even No. 4 rods. Since the invention and utilization of the duplex repeater it has been possible to run three, four and even five strands through the last five sets of rolls at the same time, and that, too, without increasing the number of men required to operate the mill.

It is by the use of this invention that the immense "runs" of to-day (upward of 325,000 pounds in ten hours) have been made possible. With all due deference to the inventors of the many valuable improvements that have been made, with a due regard for the value of the automatic reels which have done much to save scrap both in rod and wire mills, I challenge the rod mill managers of the country to show any one thing that, combined with the Garrett or any other open mill, has done more to increase the capacity and decrease the cost of rods than the duplex repeater invented by W. F. Thompson of Cleveland, Ohio. It is but just that every man should have his due, and I unhesitatingly assert that this invention originated with the latter gentleman and not with F. G. Tallman, as stated in Mr. Hunt's paper. It was while Mr. Thompson was in the employ of the Cleveland Rolling Mill Company, and that some time in 1885, that the idea first occurred to him, and I myself helped him to put the thing into practical operation in November, 1886.

Yours respectfully,

JOHN WALKER,

Superintendent, Cleveland Rolling Mill Company.

CLEVELAND, OHIO, November 28, 1891.

Mr. Edison's Latest Street Railway Work.

Some time since the New York *Herald* published an interview one of its reporters had with Mr. Edison which brought forth many opinions from prominent electricians and to which the electrical papers devoted much space. Mr. Edison, according to the reports of the daily press, was credited with having invented a system which, operating at low potential and using the rails as conductors, would do away entirely with the necessity for the overhead trolley system. It remained for the *Electrical Engineer* to pursue the most direct course for finding out just what was meant by sending a reporter to Mr. Edison. We therefore take from our contemporary the following account:

In order that our readers may be brought to a thorough understanding of Mr. Edison's recent work, it may be well to give a little of its early history. As far back as 1880, Henry Villard, at that time president of the Northern Pacific Railway, applied to Mr. Edison to devise for him a system of electric railways which should be comparatively cheap of operation and act as branch roads, and particularly as wheat feeders, to the Northern Pacific Railroad. Acting under this stimulus, Mr. Edison designed, and actually built, models of a system resembling in all essential details that which has been the subject of recent comment. Although not carried out in practice, the system devised for that particular purpose was kept constantly in mind by Mr. Edison, awaiting only the proper moment and a suitable time for its practical demonstration. About two years ago, Mr. Villard, having become president of the Edison General Electric Company, requested Mr. Edison, as electrician of the company, to devise a street railway system which should be applicable to the largest cities where the use of the trolley would not be permitted, where, if possible, the conduit should not be used, and where in general all the details of construction should be reduced to the simplest possible form. The limits within which Mr. Villard confined Mr. Edison were, simply, that the system so devised should not cost more than a cable road to install.

With these conditions placed before him, Mr. Edison reverted to his idea of nearly ten years before, and had thus settled upon a system in which current should be conveyed from the central station at high potential to motor generators placed below the ground in close proximity to the rails, and which should convert the current transmitted at the pressure of, say, 1000 volts to one of 20 volts between rail and rail, with a corresponding increase in the volume of the current. This arrangement, of course, does not embody any striking novelty, and, as Mr. Edison puts it, might have been devised by any one of 50 electricians in this country. The working out of the details of this system, however, was by no means a small matter. With the utilization of heavy currents at low voltage it became, of course, necessary to devise apparatus which should be able to pick up with absolute certainty 1000 ampères of current through 2 inches of mud, if necessary. Mr. Edison at once set about to devise such a contact. For this purpose he experimented with a metal wheel, imitating, as nearly as possible, all the conditions of electric railway street traffic as regards speed of wheel and condition of track. It was several months before he succeeded in getting even 100 ampères by means of the contacts which had up to that time been employed; but after persevering trials a device has finally been evolved which can readily pick up 1000 ampères through 2 inches of mud.

Having provided for this difficulty it was next necessary to obtain a joint between contiguous rails such as would permit of the passage of several thousand ampères without introducing undue resistance. This has also been accomplished with the result that an experimental track of about ¼ mile in length has been in actual operation near Mr. Edison's laboratory for some time past, and working to his complete satisfaction.

The objections to which rails charged at a potential of 20 volts and carrying enormous currents would be open were early foreseen by Mr. Edison, and, as a consequence, provided for. Thus it has been said that carriages with iron wheels passing over the tracks would short circuit the current and cause the destruction of the dynamo machines as well as "chew up" the short circuiting vehicle. To test this Mr. Edison actually short circuited his experimental track with a carriage having iron wheels, and succeeded in getting only 200 ampères through the wheels, the low voltage used, as well as the insulating properties of the axle grease, being sufficient to account for the small quantity of current which actually passed through. Again, the experiment was made of short circuiting the track with an iron bar. As a result it was found that with the iron bar polished, and contact effected by a man standing upon the bar, only 1000 ampères passed through it—that is, the amount which would be taken by a single car, and hence far below the capacity of the generators.

Probably the first difficulty which would seem to stand in the way of the successful solution of the problem in the manner undertaken by Mr. Edison would be looked for in the apparently large leakage of current between the rails in damp and wet weather. On this point the experiments of Mr. Edison are decidedly interesting. They have proved to him conclusively that at a potential difference of 20 volts the loss of current due to leakage between the rails under the worst conditions, with a wet and salted track, is only 5 horsepower per mile, while very wet weather would involve a loss of only 2½ horsepower. It is interesting to note that in this respect the leakage observed between the car tracks follows identically the phenomenon observed on telegraph lines. With the latter it is a matter of common knowledge that in damp, murky weather, with the insulators covered with wet dust, the leakage is far greater than during rainy weather, when the insulators are cleaned by the action of the water. In the same way a heavy rain storm will reduce the leakage between the rails by washing away the accumulations between the tracks due to the droppings of horses, which serve largely to increase the conductivity. In dry weather the loss, evidently, is practically nothing, but even under the most disadvantageous conditions a loss of 5 horse-power per mile, as shown, may be neglected in practice.

What has just been said with reference to the track applies equally well to the motor. While not differing in principle from the ordinary type of street railway motor, the motor on this system would be practically waterproof without necessitating any special protective covering for that purpose, and in the experiments actually undertaken by Mr. Edison to determine this point the motor was left out in the rain unprotected, without giving rise to any subsequent troubles, showing that the matter of insulation may be practically ignored. As regards the question of safety to human beings and animals likely to come in contact with the rails, it is needless to say that the effect of 20 volts upon the human body is imperceptible, and actual experiment has also shown that horses are not affected by it in the slightest degree.

The cost of this system, Mr. Edison estimates, will vary between $30,000 and $100,000 per mile of double track, not including the cost of the stations, and depending, between these limits, upon the amount of traffic. The running expenses, he estimates, will be exactly the same as those on the overhead trolley wire systems. With this high initial cost, it is evident that the system cannot be, nor is it intended to be, applicable to any but the largest cities and the largest short roads, where the traffic is such as to warrant an expenditure of such magnitude, and the criticisms which have been made on the system are largely based on ignorance of this fact, which, it will be acknowledged, is one of pre eminent importance. Although the cost, as above stated, may appear to be heavy, it can be very easily shown that, where the traffic permits of it, the system can be applied with far greater economy than a cable road. In the first place the latter would involve a greater expense, in proof of which we need only cite the fact that the Third avenue cable railroad, now in course of construction in this city, was contracted for at the rate of $150,000 per mile without stations, while the Broadway cable road is estimated to cost not less than $300,000 per mile. But in addition to the item of first cost in favor of the electric railway must be considered the fact that the cost of operation of the electric road would be far below that of the cable. The traction

efficiency of cable roads under the most favorable circumstances, it is well known, hardly exceeds 18 per cent. to 25 per cent., while 50 per cent. ought to be readily obtainable with the electric system. Another advantage, which, though of secondary consideration, should not be overlooked, lies in the fact that to install the system devised by Mr. Edison would require no extended tearing up of the streets and would offer practically no interruption to the traffic of existing roads, which could be converted in a very short time to the electric system.

In conclusion, we may add that estimates are now being prepared for the conversion of one of the largest street railways in New York city over to the electric system, after the plan of Mr. Edison, and it is to be hoped that arrangements will soon be effected by which the system may receive a practical trial on a large scale in the near future.

OBITUARY.

COL. ENOCH ENSLEY.

Col. Enoch Ensley, prominently identified with the development of the iron industry in the South, has died at Memphis, Tenn., aged 57 years. The deceased was born in Nashville, but early in life took up his residence in Memphis and engaged in cotton planting in the Mississippi valley. In 1881 Colonel Ensley, together with other citizens of Memphis, purchased the Pratt Coal and Coke Company property, at the same time moving to Birmingham, Ala., where later he brought about a consolidation with the Alice furnace property, and ultimately these were merged with the Tennessee Coal, Iron and Railroad Company, of which he was the first president. He organized the Lady Ensley Coal, Iron and Railroad Company, and was also largely interested in Birmingham enterprises and was a director of the First National Bank of that city.

W. H. IRWIN.

W. H. Irwin, proprietor of the Rosedale Foundry, in Allegheny, Pa., died very suddenly at his home in that city on Thursday, the 26th inst. His death was caused by congestion of the brain, from which he had suffered but 48 hours. Mr. Irwin was in the 51st year of his age and was a member of the Revolutionary Order of Cincinnatus, the membership descending to him through his great-grandfather, Major John Irwin. He leaves a wife, two sons and two daughters.

PETER C. LAMP

died at his home in Davenport, Iowa, November 17, in his 69th year. Mr. Lamp has been identified with the hardware business of Davenport for a number of years. In 1888 the Peter Lamp Iron Company were formed, with Mr. Lamp as president, a position which he held at the time of his death. Mr. Lamp was one of Davenport's substantial business men, and was held in high esteem by all who knew him.

In the last decade St. Louis has added over 100,000 to her population, an increase of nearly 30 per cent., and this increase is mainly attributable to the development of manufactures and the creation of new sources of profit and employment. An aggregate investment of over $70,000,000 has been made in new enterprises since 1880, and this has caused a demand for the labor of more than 44,000 additional artisans. The number of hands now employed is nearly 86,000, and the wages annually distributed in the city amount to $50,000,000. There are now 5402 manufacturing establishments, where there were 2924 ten years ago, and the value of their products is $213,000,000, an increase of about $100,000,000 over 1880. The total capital invested in such enterprises is $120,000,000, or more than double that of ten years since, indicating an average annual increase of $12,000,000, or $1,000,000 a month, for the period covered by the census.

Launch of the New York.

Yesterday the largest and most formidable war vessel yet built for the new navy was launched at the Cramp yards, Philadelphia. In the Navy Department at Washington the new vessel is known as armored cruiser No. 2, and was authorized by the Appropriation act of September 7, 1888. Her cost, exclusive of armament, was not to exceed $3,500,000. On June 10, 1890, the bids for building the New York were opened at the Navy Department, and the contract was awarded to the William Cramp & Son's Ship and Engine Building Company.

From stem to stern, the new vessel will be fitted with every modern convenience that science can devise for the comfort and health of both officers and crew. She will be artificially ventilated throughout, and the living spaces made as habitable as possible. Care has also been taken to make all the pumping and draining arrangements thorough and efficient. There will also be a complete electric lighting plant. The New York will be fitted as a flagship, and in addition to the quarters of admiral and captain, there will be staterooms for 20 wardroom, 12 junior and two warrant officers.

Following are the principal dimensions of the New York:

Length on the water line	380 ft. 6.5 in.
Breadth of beam	64 ft.
Mean draft	23 ft. 3.5 in.
Displacement	8150 tons
Maximum speed	20 knots
Sustained sea speed	18.5 knots
Complement (officers and men)	475
Coal endurance (total capacity)	13,000 miles.

The above table shows that the new vessel will have a displacement of 1500 tons in excess of the Maine, now building at the Brooklyn Navy Yard, and a collective horse-power of 18,000, nearly 8000 more than that of any vessel now in our service. There will be four separate engines, each having a power of 4500 horses. They are vertical, inverted, direct-acting, triple expansion engines, and will be arranged in four water-tight compartments. The cylinders will be three in number, having a diameter of 32, 46 and 70 inches respectively, with a stroke of 42 inches. The air and circulating pumps will be driven independently, and the four main condensers will have an area of 5560 square feet. Steam will be furnished by six horizontal return, tubular boilers, placed two abreast in three water-tight compartments. They will be 15 feet 3 inches in diameter and 21 feet 3 inches in length. The working steam pressure will be 160 pounds to the square inch, the total grate surface 990 square feet, and the total heating surface 31,190 square feet. In addition to these there will be two auxiliary boilers above the protective deck. Both the main and auxiliary boilers will be fitted to work under forced draft on the air-tight fireroom system.

The New York's battery will consist of six 8-inch breech-loading rifles, 12 4-inch rapid-fire guns, eight 6 pounder rapid-fire guns, four Gatlings and six torpedo tubes. Two of the 8-inch guns will be mounted on barbette forward on the upper deck, and two in a similar barbette aft, while the remaining two will be carried in broadside amidships on the upper deck. The buoyancy and stability of the New York will be protected by one partial belt of armor, another belt of water-excluding material and a complete protective deck. At the sides the protective deck is 4 feet 9 inches below the water admidships, and 1 foot above when vessel is at a mean draft of 23 feet 3.5 inches. It is covered with two courses of plating, having a thickness of 3 inches amidships and 2½ inches forward and aft. Amidships the slopes are covered with an additional thickness of 3 inches, and the entire space between this and the skin of the ship filled in with cellulose to exclude water in case a projectile should penetrate.

In the wake of the machinery spaces a belt of thin armor is worked between the protective and berth decks. The total thickness of metal on the sides throughout this space is 5 inches. In addition to this protection a large supply of coal will be stowed on the armor deck, forming an additional safeguard against serious damage near the water line. The barbettes on which the 8-inch guns will be mounted are 10 inches thick, and the conical revolving shields on the guns 7 inches. The sloping armor between the upper and gun decks beneath the barbettes is 5 inches, and the ammunition tubes below of the same thickness. On the broadsides the 8-inch guns will be also protected by partial barbettes 2 inches thick. In the secondary battery the 4-inch rapid-fire guns will be mounted on the gun deck in armored sponsons, 4 inches thick, with protective shields on the guns, closely covering the ports. Further protection is also assured by 1-inch splinter bulkheads. The 6-pounder gun will also be protected by 2-inch armor. One torpedo tube will be fixed on the bow, one on the stern and two on each broadside—all above the water line. The 8-inch and the 4-inch guns are 25 and 16½ feet respectively above the water.

In addition to the protective deck the New York will have three other complete decks and a large flying deck or bridge, upon which all of her boats will be carried. There will be no sail-power, the masts serving as military ones, which will be fitted with double fighting tops. With a freeboard of 20 feet from the water to the upper deck, the new cruiser will be able to fight her guns and maintain her speed in a seaway that would render smaller ships practically helpless.

PERSONAL.

William B. Phillips has resigned his professorship at the University of Alabama to accept the post of chemist at the furnaces of the Grand River Company, Grand River, Ky.

Henry D. Hibbard of the Taylor Iron and Steel Company, sailed for home on the 21st ult.

A. J. Forbes-Leith, one of the directors of the Illinois Steel Company, has returned to New York from his annual summer sojourn in Scotland.

J. C. Platt of the Spiral Weld Tube Company, New York, has sailed for Europe.

H. M. Howe of Boston, who made a study of the Hatfield casting process in Sheffield, has returned to Boston.

Ludwig Dreier, for many years connected with Naylor & Co., has retired from the firm to enter the business of the Aluminum Steel and Alloy Company of New York and Findlay, Ohio, who are working under the Hill patents.

H. M. Curry of Carnegie Bros. & Co., Pittsburgh, has returned from his brief trip to Panama.

Henry Phipps, Jr., well known in the iron and steel trades of the country through his connection with the Carnegie interests, recently addressed a letter to

Mayor Gourley of that city, in which he offered to give the city $100,000 for the purpose of building a conservatory, to be located in Shenley Park in that city. As soon as a meeting of councils can be held action on the generous offer of Mr. Phipps will be taken, and there seems to be no doubt whatever but that his proposition will be accepted. It will be remembered that a little more than a year ago Mr. Andrew Carnegie also made the citizens of Pittsburgh an offer of $1,000,000 for the construction of a library, which will also be located in Shenley Park. Architects from all over the country have prepared designs for the library building, and these have been on exhibition in Pittsburgh for several weeks past. It is expected that within a short time a choice will be made, and the preliminary work looking to the construction of the building will be commenced.

G. J. Snelus, one of the vice-presidents of the Iron and Steel Institute, delivered a lecture before the Whitehaven Scientific Association on the American trip of the English iron masters. From an abstract printed in the *News* it is evident that Mr. Snelus clearly appreciated the magnitude and the bearing of the works and mines he visited.

Charles H. Dengler, treasurer of the Pottsville Iron and Steel Company of Pottsville, Pa., has been appointed National Bank Examiner for the Eastern District of Pennsylvania and will resign his present post.

The Cleveland City Forge and Iron Company of Cleveland, Ohio, recently turned out a large rudder frame for the United States Cruiser No. 2, named the New York. This rudder is about 20 feet high by 15 feet wide, and 38 inches thick at the heaviest part. The rudder stock is 19¼ inches in diameter. The weight of the frame is between 13 and 14 tons. Another one being made is between 2 and 3 tons heavier, and is for Cruiser No. 12. The rudder stock is 19½ inches diameter. The company recently shipped a beam strap for a Sound steamer which was 34 inches between end pins, or 36 feet 6 inches over all, and 16 feet 8 inches wide over all. The mean sections of the sides are 10¼ inches and 11⅝ inches, the finished weight being 36,310 pounds. A spare shaft for the Sound steamer Pilgrim was turned out not long since that weighed, finished, 68,200 pounds. It was 39 feet 5 inches long and 27 inches in diameter. The company will at once erect a large addition, 69 x 160 feet, to their turnbuckle department, to be of iron, except a portion of the walls to be of brick. A further extension in connection with this department is contemplated, to make a line of light and heavy drop forge or die work for railroads, &c. In the main forge the company have put in recently three additional large hammers, and at one of them a pair of 50-ton cranes, operating in all movements with steam.

The recent purchase of the National Forge and Iron Company's rolling mill, at East Chicago, Ind., by Weaver, Getz & Co., was refused confirmation last week by the court having jurisdiction. Evidence was submitted to the satisfaction of the court that the price was too low, and the receiver was directed to re-advertise the property. Accordingly, Wm. H. Gostlin, receiver, announces that he will receive bids for the plant, together with all supplies and raw materials on hand, up to 12 o'clock noon, December 15, 1891, at the office of Johnson & Slick, rooms 505 and 507, at 21 La Salle street, Chicago, Ill. The property will be sold as a whole for cash, subject to the approval of the court. A copy of the order and full particulars will be furnished by the receiver on application.

Trade Publications.

BEAMAN & SMITH of Providence, R. I., have just issued a new catalogue descriptive of their screw-cutting engine lathes, duplex-milling machine, horizontal and vertical suspended milling machine, locomotive cylinder port milling machine, horizontal drilling and boring machine and their safety drill and tap holder. The latter drill is intended for use in the upright drill, lathe, screw machine or any machine provided with a revolving spindle. The holder is very simple in construction, there is nothing to break or get out of order and no complicated parts. It consists of a bed screw threaded upon the outside and recessed to receive a friction socket formed with a taper shank regularly made to the Morse taper. The friction socket receives the drill or tap socket, and is held between the pieces of vulcanized fiber and is driven by the friction obtained by tightening a cap threaded to screw on the holder. The friction thus produced is sufficient to drive the drill or tap used.

THE EUREKA TEMPERED COPPER COMPANY of 35 Broadway, New York, and Phœnix Building, Chicago, have published a pamphlet calling attention to the use of their tempered copper for boxes and bearings. To meet the increased demand for this material they have enlarged and perfected their facilities for its manufacture, and are now prepared to fill orders, either large or small, promptly. They present a list of some of the more important uses of tempered copper, and many testimonials from well-known concerns showing where it has worked to advantage.

WE HAVE RECEIVED from James H. Billington & Co. of Philadelphia a circular describing the Globe Packing made by them, and giving a list of testimonials from those who have used it. This packing is carefully made of fine cotton yarn and pure rubber. The lubricant in it is one that is not affected by chemicals, and the packing is therefore especially adapted for mine pumps. It is claimed that it will make a perfect joint with less friction than any other packing, because of its uniformity and quality of materials used in its construction.

THE THIRD ANNUAL CATALOGUE just issued by Pattin, Hill & Pattin of Marietta, Ohio, describes their steam pumps, steam engines and hoisting engines. A valuable feature is the method of packing the plunger. Loosely fitting the plunger and fitted against a shoulder in the cylinder casting is a brass ring. The plunger packing of hemp or other similar material is held in place by a cage which fits over the plunger and tightens up the packing by means of a tail screw, which extends through the end of the cylinder. This screw is held by a check nut after having been brought to proper position. The steam valves in these plunger pumps are operated by an auxiliary valve, which admits steam to the main valve. The stroke of these pumps is variable, depending upon the position of the knocker collars, which can be placed at any points within the extreme limits of the stroke.

AN ILLUSTRATED CATALOGUE of the temperature controlling devices made by the N. E. Fire and Heat Regulator Company of Boston has been received. The apparatus consists first of a thermostat, by means of which an electrical contact is made when the temperature rises or falls 1° more or less than it is desired to maintain. The thermostat is located in an accessible place on the outside of the vulcanizer or dry room. It has an extension which projects into the vulcanizer or dry room, and thus is only affected by the temperature of the inside. The thermostat is connected by means of an electric wire to a battery and to an electric mechanical motor. The circuit is closed at the thermostat (by the rising or falling of the temperature, as before described), thus causing the crank arm of the motor to make a half revolution each contact. The construction of the motor is such that the crank arm is alternately at the highest and the lowest point when at rest, and is connected by a chain to a lever valve. This valve is either open or closed, just as the crank arm is at the highest or lowest point. The apparatus is operated by three cells of Leclanche battery, and the only attention that it requires is to wind the motor when run down, and to set the hand of the thermostat at the degree of temperature that it is desired to maintain.

MANUFACTURING.

Iron and Steel.

The Edgar Thomson Steel Works of Carnegie Bros. & Co., Limited, at Bessemer, Pa., will close down on Saturday, December 12, for the purpose of making the usual annual repairs. The shut down will be as brief as possible, as it is understood the firm have a large number of orders on hand which will necessitate the plant being operated with as little loss of time as possible.

The Blairsville Rolling Mill and Tin Plate Company of Blairsville, Pa., have been chartered. The capital is $75,000.

The new plant of the Cherokee Iron Mfg. Company, at New Birmingham, Texas, is about completed. The Cherokee Furnace will go into blast in a few days. Its capacity is 50 tons.

It is stated on good authority that the Oliver Iron and Steel Company of Pittsburgh contemplate purchasing the Rosena blast furnace plant located at New Castle, Pa., which the firm have been operating for some time under lease under the management of George E. Tener. Some time since announcement was made in these columns that a meeting of the stockholders of the Oliver Iron and Steel Company would be held in Pittsburgh, on Tuesday, December 8, for the purpose of voting on a proposition to increase the capital stock of the company from $1,600,000 to $2,000,000. It is now stated that the object in increasing the capital stock of the company is to secure funds for the purchase of the above blast furnace plant. The furnace is in excellent order, and has been making a good record for some time, and this is given as the reason for the desire on the part of the Oliver Iron and Steel Company to acquire possession of it. Edith Furnace, in Allegheny, Pa., formerly operated by the Monongahela Furnace Company, but purchased about a year since by the Oliver Iron and Steel Company, has been extensively overhauled and is now in good condition. The repairs are about completed, and the furnace will go in blast before the first of the year.

The Cincinnati Iron Company, capitalized at $2,000,000, have filed articles of incorporation at Duluth, Minn.

The Haselton Furnace, at Youngstown, Ohio, is being relined, and the work is being pushed night as well as day by the use of electric lights in the stack.

The Falcon Iron and Nail Company of Niles, Ohio, are enlarging their works with a view of increasing the production of iron, and have placed an order for a 22-inch cold-rolling train with the Lloyd Booth Company of Youngstown, Ohio. The last-named firm recently shipped an 8-inch mill shear to the Lake Erie Iron Company, at Cleveland, Ohio.

The Sterling Steel Company of Pittsburgh, Pa., whose works are located at Demmler, Pa., are making a number of 6 and 8 inch projectiles for firing tests, which are being made in the East under the supervision of Government officers. So far the results obtained are said to have been very satisfactory.

Announcement is made that Irondale Furnace, located at Independence, Preston County, W. Va., has been sold by Col. F. Nemegyei to a company of New York parties for $50,000. The furnace is 60 x 13½ feet in size, and was built in 1861 and rebuilt in 1886. It is equipped with Gordon-Whitwell-Cowper stoves and makes slightly cold short pig iron, having an annual capacity of 18,000 tons. The coke used in the furnace is manufactured from coal mined on the property, the ore used being a mixture of limonite and hematite.

The Trenton Malleable Iron Company of Trenton, N. J., have found it necessary to erect additional buildings, which will double their capacity. The extensions are now completed, and will enable them to fill up all orders promptly. Among their specialties are car couplers, &c., the company being the sole manufacturers of the Africa & Gibson car replacer.

The Archer gas-fuel process is being tested at the Bethlehem Iron Works, South Bethlehem, Pa., in the Eureka puddling furnaces designed by William Stubblebine.

The Rockdale Mining and Mfg. Company of Columbia, Tenn., have made an assignment. The liabilities are placed at $190,000, which includes $131,000 of bonds, leaving a floating debt of $60,000. Six thousand acres of timber and mineral land, and a new $86,000 furnace, including about $40,000 worth of pig iron on hand, constitute the assets. The furnace is operated under lease by the King Furnace Company, Dayton, Ohio.

Henry W. Borntraeger, for a number of years general manager of the Upper and Lower Union Mills of Carnegie, Phipps & Co., Limited, at Pittsburgh, has been ordered by

his physician to give up all business on account of his rapidly failing health. Mr. Borntraeger has been unwell for some time, but persisted in discharging his duties in the above establishment. The time has come, however, when it is absolutely necessary for him to give up all work and take a long period of rest. Mr. Borntraeger is probably one of the best-known rolling mill managers in this country, and has the full esteem and confidence of the firm with which he has been so long identified.

The Totten & Hogg Iron and Steel Foundry Company of Pittsburgh have just received a contract for the principal part of the rolling mill machinery for the new rolling mill which is being erected by the Allequippa Steel Company of Allequippa, Pa., on the line of the Pittsburgh and Lake Erie Railroad, about 15 miles from Pittsburgh. This is said to be one of the largest orders for rolling mill machinery that have been placed in Pittsburgh for some time. The same firm have also several other large orders on hand, one of which is a blooming mill table for the Fort Payne Rolling Mill Company, Fort Payne, Ala. Also a large order for Higgs patent water valve for the Phœnix Iron Company, at Phœnixville, Pa. The firm have just completed an order for fly wheel and chill rolls for the National Tube Works at McKeesport, Pa., and also two very large driving wheels and wrought-iron shaft for the Canonsburg Iron and Steel Company at Canonsburg, Pa. They have also recently completed and shipped a large improved Burden squeezer for the San Diego Iron and Steel Company of San Diego, Cal.

The largely increased business received by the Sharon Steel Casting Company, Sharon, Pa., has made it necessary for the firm to increase their facilities for production, as with their present equipment they are unable to fill all the orders received. With this object in view the firm are erecting a Bessemer plant to contain two 4-ton converters, the building to be of wrought iron 105 x 75 feet in size, which addition is to be used for the manufacture of steel castings. Heretofore the firm have only made open-hearth steel castings, but owing to the many demands made on them for soft steel castings they have decided to erect a Bessemer plant and manufacture them. The business of the Sharon Steel Casting Company was established at Sharon a few years ago in a comparatively small way, and has rapidly increased ever since. Much of the success of the firm is due to the enterprise and ability of Daniel Eagan, who has been general manager of the concern since it commenced business. The firm also have an excellent reputation for the class of goods which they manufacture, and their trade extends to all parts of the country. F. H. Buhl is president of the concern, Samuel McClure, vice-president, and, as stated above, D. Eagan is general manager.

It is intimated that the next step in the development of the Duquesne Works of Carnegie, Phipps & Co. will be the building of blast furnaces, so that billets can be made from direct metal. The mill has been doing very well lately, coming up to 900 tons a day.

The Corning Steel Company have been organized at Chicago, with a capital stock of $250,000, for the manufacture of iron and steel. Incorporators, Charles S. Corning, Frank B. Felt and William O. Johnson.

Machinery.

The Huyett & Smith Mfg. Company of Detroit, Mich., manufacturers of heating and ventilating apparatus, have recently placed plants with the Wrought Iron Bridge Company of Canton, Ohio; Chicago and Grand Trunk Railway people, H. W. Johns Mfg. Company, New York, and the Detroit Pearl Button Company.

The Foundry and Machine Works, Harrisburg, Pa., have built and put in operation at the Jones & Laughlin Steel Mills, Pittsburgh, a 300 horse-power cross compound engine. They have also built for the exposition at Augusta, Ga., a 200 horse-power tandem compound engine. A recent shipment was made by them of 25 of their steam road rollers, which are gaining a high reputation all over the United States, as shown by the increasing demand.

The first steel derrick ever made in Barre, Vt., was raised at a granite quarry there on November 20. The boom has a radius of 71 feet and the mast is 99 feet high, it being the highest unsupported metal column in the world. All the castings for this derrick were made at Danville, Pa., by the Mahoning Foundry and Machine Company.

The Henley Machine Tool Works of Richmond, Ind., have just occupied the large new addition to their factory. They are very busy, and report increasing demand and sales of their pulley lathes. They have just made shipments as follows: 60-inch pulley lathes to C. & A. Potts & Co., Indianapolis, Charles Kaestner & Co., Chicago, and the McDonough Mfg. Company, Eau Claire, Wis. 42-inch pulley lathes to the W. F. & J. Barnes Company, Rockford, Ills., and 30-inch lathes to Standard Elevator Company, Chicago, and the Curtis Mfg. Company, St. Louis, Mo.

It is announced that the Buffalo Cast Iron Pipe Company will erect a large foundry at Buffalo, N. Y.

The Providence Tool Company of Providence, R. I., who failed in 1882 and paid 50 cents on the dollar to secured creditors, have made a general assignment. Attachments amounting to $39,000 have recently been placed on the property.

The Bay State Iron Works, at Erie, Pa., which are now operated under the control of the Keystone National Bank of that place, will probably be put upon another basis. The new organization will be a stock company, and the plant will continue to manufacture marine engines and mining and hoisting machinery.

The Mekarski American Compressed Air Motor Company of North Tarrytown, N. Y., have been incorporated. The company will manufacture and sell compressed air motors, &c., and the capital stock is $1,000,000. The following are the directors: Edward Nichols, Addison C. Rand, James F. Lewis, Charles B. Johnson, Edwin F. Abell, C. Philip Laurenson and George E. Whipple.

The Webster, Camp & Lane Machine Company of Akron, Ohio, it is said, have decided to remove their works to Kent, Ohio, where 14 acres of land have been donated them by the business men of that place.

Frank Elson will build and operate a foundry at New Haven, Conn., next spring. Stock to the amount of $50,000 has been subscribed toward the formation of a stock company, and in the event of such a company being organized the plant will be an extensive one.

The Belden Machine Company of New Haven, Conn., will build an addition to their works, the dimensions of which will be 250 x 75 feet and two stories high.

Lock & Lincoln's machine shops, at Marion, Va., have been burned, at a loss of $10,000.

The Clinton, Iowa, Bridge and Iron Works have been bought by C. Lamb & Sons for $20,000.

A machine shop will shortly be started at Flatonia, Texas, by E. P. Howland.

Murray & Porter contemplate establishing a foundry and machine shop at Jefferson, Texas.

Pittsburgh, Texas, has raised a bonus for the establishment of another iron foundry at that place.

Hardware.

The factory of the Northern Refrigerator Company, Grand Rapids, Mich., is reported to have been running steadily all through the summer. They have added to their assortment of refrigerators a complete line of new styles, which are referred to as especially artistic in design. Their new catalogue is now in the hands of the printers and will soon be ready for mailing to customers.

The Henry C. Hart Mfg. Company's works, Detroit, have been rebuilt upon the site of their former plant, which was destroyed by fire in August. The new building is of increased proportions, substantially fire proof, and thoroughly equipped with machinery and tools requisite for the manufacture of their line, which embraces specialties in hardware. The works are now occupied and in operation with much improved facilities for the production of their output.

Blount Mfg. Company, Boston, Mass., have recently erected a new factory 120 x 35 feet, three stories high. It has a machinery room, fully equipped with the most modern automatic and standard machinery; also stock, assembling, inspecting, testing, box, finishing and shipping rooms, and an office. The entire building is heated by steam and lighted by electricity from their own dynamo, and has freight elevators to each floor. They manufacture hardware specialties, among which is the Blount door check and spring, the product of which is 200 per day.

The Weymouth Lock Company have permanently organized at Saco, Maine, with R. Jordan as president, M. H. Kelley secretary and treasurer, and R. Jordan, F. C. Bradbury, Franklin Nourse, Charles Hersey, J. O. Bradbury and S. K. Weymouth, all of Saco, and George E. Hathaway of Gardiner, as directors. The company will vigorously push the manufacture of the Weymouth lock, which was invented by S. K. Weymouth.

The American Wheel Company's plant at Fort Wayne, Ind., formerly owned by N. G. Olds & Sons, which has been idle for some time, resumed manufacturing December 1.

The Chalfant Mfg. Company of Atglen, Pa., have been compelled by the increasing demand for their hardware specialties to secure a new location. After considerable investigation of locations at points between Trenton, N. J., and Baltimore, Md., they finally decided on Lancaster, Pa., as offering the best all around facilities. The company purchased 4 acres of land fronting the Pennsylvania Railway, with track direct into the yard, and the Reading Railway within 100 feet, and have built a factory which they have just put in active operation. The main shop is 118 x 38, the foundry 153 x 63, besides engine room, 40 x 40; store room, packing room, nickel and bronzing room, &c. There are about 250 windows in all, so that there is plenty of light and ventilation. The shafting is placed under the floor, and bolted down to solid masonry. This they find more economical than if hung from the ceiling; being more rigid, the alignment is not disturbed by continual jarring of machinery, thus saving wear and tear. The light from the windows is not interfered with by a net work of belts and shafting running to ceiling, which is a great advantage. The factory at Atglen will also be kept in operation for the present.

Miscellaneous.

Wm. McFarland of Trenton, N.J., in addition to his specialty of chilled cast wire dies, is manufacturing the Morris Bros. & Park Fence Making Machine, and under his own patents a corner brace and bedstead fastener and sash weight molds. Mr. McFarland has recently purchased land adjoining the Pennsylvania Railway, with which he has direct connection, and has built a very complete foundry and machine shop.

The New York and New Jersey Construction Company have filed a certificate of organization in New Jersey. The concern are capitalized at $500,000, and propose to build bridges and do all kinds of construction work.

Pennsylvania Lubricating Company have been organized at Joliet, Ill.; capital stock, $25,000; for the manufacture of lubricators; incorporators, Grant McCargo, William Gardner and F. C. Caldwell. The Craver & Steele Mfg. Company, at Harvey; capital stock, $400,000; will manufacture harvest machinery, agricultural implements, vehicles and wheels; incorporators, C. F. Craver, Alonzo Steele, David Kelly and A. H. Craver. The Finfrock & Veesenmeyer Patent Journal Oiler Company, at Chicago; to manufacture a patent journal oiler; capital stock, $1,000,000; incorporators, George Finfrock, John Jacob Alspeter and George Veesenmeyer.

The Harris Car Company, with a capital of $1,000,000, will probably locate at Putnam, Conn., providing the citizens of the latter place will submit to the terms proposed, which will give the company 50 acres of land, subscriptions to $50,000 of stock and exemption from taxes for a term of years.

Wm. Cramp & Sons Ship and Engine Company of Philadelphia are making extensive changes in their plant and have placed the contract for a new boiler shop with the Berlin Iron Bridge Company of East Berlin, Conn. This boiler shop will be constructed entirely of iron and will be composed of two parts, one part 55 feet in width by 350 feet in length, made very high between joints, on account of moving large marine boilers over each other. This portion of the building is controlled by a 50 ton traveling crane, which is to be furnished by Wm. Sellers & Co. of Philadelphia. Connected with this main portion will be a wing 58 feet wide by 370 feet long, served the whole length by a 20-ton Sellers traveling crane. The building is composed entirely of iron from the designs of the Berlin Company, and will be one of the most complete of its kind as no pains or expense have been spared to make it complete in every detail.

The Steel Barbed Fence Ribbon Company will erect a building, 100 x 30 feet, at Denver, Col. The company were recently organized with a capital stock of $250,000.

The galvanizing works of the Falcon Iron and Nail Company at Niles, Ohio, have been put on double turn.

The Baldwin Locomotive Works, Philadelphia, will build for the Reading Railroad Company 21 new locomotives of the compound type. One of these will be specially designed for fast speed, and will be used on the run between New York and Washington.

The American Graphophone Company will resume operations at their works at Bridgeport, Conn. The machine which will be turned out is said to be much superior to the old form, which did not prove successful enough to continue manufacturing. The works start with an order for 500 machines.

It is reported that the wire works at Elgin, Ill., are to be purchased and put into operation by local capitalists.

The Thomson-Houston Carbon Company's works and McLean's spike works, at Fremont, Ohio, have been burned as the result of an explosion in the carbon works. The loss is placed at $250,000; insurance, $150,000.

TRADE REPORT.

Chicago.

(*By Telegraph.*)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, December 2, 1891.

The inclination of the railroad companies to more liberal purchases of material, as shown by their orders for Steel Rails, is imparting more confidence to the average seller. It is conceded on all sides that December may be a quiet month, for obvious reasons, but the turn of the year is regarded with much hope.

Pig Iron.—The downward course of prices now bids fair to be checked. Much uneasiness was caused for a time by reports that Southern Coke was being offered at considerably lower prices, but for some reason the furnace companies have ceased their efforts to force their product on the market. Offers of lower prices than they named have been refused, so that a point at last appears to have been reached below which they will not go. This, of course, improves the local situation. Local Coke can be had at some concession for reasonably early delivery, but manufacturers are beginning to feel concerned over prices for future delivery. Now that the Ore shipping season is over and it is definitely known that there has been a falling off of over 4,000,000 tons from last year, it is evident that the receiving docks will be pretty well cleaned up by next spring. An advance is then expected in both Iron Ore and carrying charges. Under the circumstances further sales of Pig Iron for long deliveries will be made with caution. Consumers are taking this matter into consideration, as well as manufacturers, and while they are only inquiring in a general way, it is believed that some considerable business may take place at a reasonably early day if the manufacturers do not ask too great an advance over present prices. The carload trade in both local and Southern Coke is moderately good. Advices from the South report the car famine about over and shipments being made more promptly. It is further stated on good authority that the warrant system is meeting with disfavor even among those who were strongest in supporting it at the start. Car Wheel makers are in the market for at least 5000 tons of Lake Superior Charcoal, and may take considerably more. The malleable people are also figuring on additional supplies. A meeting of the leading Lake Superior Charcoal makers was held here last week to consider the condition of the trade and take some action to improve it. Nothing definite was done, but another meeting will be held soon. It is reported that the plan meeting with most favor is to pool all the furnaces and sell through a single agency. Leading brands are being held at $17. Quotations are unchanged as follows, f.o.b. Chicago:

Lake Superior Charcoal	$16.75 @ $17.25
Local Coke Foundry, No. 1	15.50 @ 16.00
Local Coke Foundry, No. 2	14.75 @ 15.00
Local Coke Foundry, No. 3	14.25 @ 14.75
Local Scotch	16.00 @ 16.50
Ohio Strong Softeners	17.75 @ 18.25
Southern Coke, No. 1	15.50 @ 16.00
Southern Coke, No. 2	14.75 @ 15.00
Southern Coke, No. 3	14.00 @ 14.25
Southern, No. 1, Soft	15.00 @ 15.50
Southern, No. 2, Soft	14.25 @ 14.50
Southern Gray Forge	13.75 @ 14.00
Southern Mottled	13.25 @ 13.50
Tennessee Charcoal, No 1	18.00 @ ....
Alabama Car Wheel	20.50 @ 21.50
Coke Bessemer	16.50 @ 17.00
Hocking Valley, No. 1	17.00 @ 18.50
Jackson County Silvery	17.50 @ 18.00

Spiegeleisen—Is selling in carload lots at $28 for 20 %.

Bar Iron.—Business has been quiet the past week; car builders are not buying at the moment, and jobbers are not inclined to stock up with their inventory season approaching. Manufacturers quote 1.70¢, half extras, Chicago, but this is being shaded on good specifications. Bar Steel is quoted at 1.90¢ rates.

Structural Iron—No less than five building permits have been taken out since our last report for 16-story buildings. A very large amount of material will thus be needed for next year. Angles are quoted at 2¢ @ 2.15¢ from mill, according to specification; Universal Plates, 2.12½¢ @ 2 15¢; Beams and Channels, unchanged. The Edgemoor Iron Company secured a World's Fair Contract for 5000 tons of structural work at 4.29¢ ₱ lb.

Plates.—The Chicago Ship Building Company have secured a contract for another steel boat. It will be an ore carrier nearly as large as the one now under construction. General trade is in the same dragging condition as last week, but the demand from stock is a little better than it has been; prices are unchanged.

Sheets.—The inquiry for Black Sheets is improved. Mill lots of No. 27 Common are quoted at 2.95¢, Chicago; jobbers quote at 3.20¢ from store. Galvanized Iron is still very active and the manufacturers are not yet shipping promptly. The low prices and the heavy trade are giving rise to numerous complaints as to gauges, coating and quality of the metal. Consumers are willingly paying higher prices to get exactly what they require. Juniata is quoted at 65 and 10 % off from stock.

Merchant Steel.—Quite a large sale for this time of the year was made last week to an implement manufacturer who needed more material for his season requirements. Railroad business has been fair in Tool Steel. Specifications on old orders for cheap Steel are coming in much better than usual. Carload lots of Machinery, Open-Hearth Spring and Tire Steel of first-class makes are quoted at 2¼¢. Tool Steel sells at 6½¢ and upward, according to quality.

Track Supplies.—The inquiries for Steel Rails are keeping up well, but no large orders have been booked the past week. Sales of 1000 to 5000 tons are quite frequent. Quotations continue at $31 and upward, according to the character of the order. Splice Bars are in good demand at 1.80¢ @ 1.85¢. An order for 3000 kegs of Track Bolts was placed at a shade under 2.75¢ for Hexagon Nut. Spikes seem to be strongly held at 2.15¢ @ 2.25¢.

Old Rails and Wheels.—Large lots of Old Iron Rails are being offered, but there is no demand from consumers, who seem to be stocked for the present. They are nominally quoted at $21.75. No transactions have occurred in Old Steel Rails. Short pieces are probably worth $13.50. Carload lots of Car Wheels are being sold at $16 @ $16.50.

Scrap.—Stock keeps accumulating, but sales are light. The dealers are about the only buyers. Selling prices are as follows: No. 1 Railroad, $18; No. 1 Forge, $17.50; Horse Shoes, $18; Car Axles, $22; Fish Plates, $20; No. 1 Mill, $12; Pipes, $11.50; Sheet Iron, $8; Cast Borings, $7; Wrought Turnings, $10; Axle Turnings, $12; Machinery Cast, $11.50 @ $12; Malleable Cast, $9; Stove Plate, $9; Mixed Steel $11.75; Coil Steel, $15.50; Leaf Steel, $17.75.

Metals.—Carload lots of Lake Copper are now selling at 11⅛¢, and casting brands 11¢, with but small transactions. Spelter is off, prime Western being quoted at 4.60¢, but even this has been shaded on some sales recently made. In Pig Lead dealers look for quiet markets from now to the close of the year, but say they see no cause for a marked change in either direction. The sales for the week amount to some 300 or 400 tons at prices ranging from 4.10¢ to 4 15¢, chiefly car lots for immediate delivery.

The Chicago Steel and Iron Roofing Company have opened an office at 269 Dearborn street, Room 316, Boylston Building.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, December 1, 1891.

Pig Iron.—Business continues comparatively quiet. It is the opinion of those who are well informed, and whose views are entitled to some consideration, that there cannot possibly be much risk in buying at present prices, which we quote as follows:

Neutral Gray Forge	$13.35 @ $13.65, cash
White and Mottled	13.00 @ 13.25, "
All-Ore Mill	14.00 @ 14.25, "
No. 1 Foundry	15.50 @ 16.00, "
No. 2 Foundry	14.75 @ 15.00, "
No. 3 Foundry	14.00 @ 14.25, "
No. 1 Charcoal Foundry	21.00 @ 21.50, "
No. 2 Charcoal Foundry	20.00 @ 20.50, "
Cold-Blast Charcoal	25.00 @ 27.00, "
Bessemer Iron	15.00 @ 15.25, "

There have been no sales of standard brands of Bessemer below $15, cash, and there are few sellers to be found at that price. Well known brands of Gray Forge are steady at $13.50, cash, with city furnaces well closed up. Foundry Irons continue dull, and no improvement can reasonably be looked for until after the advent of the new year.

Muck Bar.—There is considerable offering and not much wanted. Some sales reported at $26, cash, but we learn that it has been offered below the price quoted. The stock piled up in mill yards is much larger than it has been for several years.

Manufactured Iron.—There is not much new business at present, but it is expected that there will be soon after the new year opens up, and even now most of the mills have about all they can do working up old contracts. It is confidently expected that the railroads will be large buyers both of Iron and Steel early in 1892, and even now we hear of some large contracts about to be placed for cars and locomotives. Prices remain about as last quoted: City made Iron is quoted at 1.67½¢ @ 1.70¢ for Bars, full extras; Plate and Tank, 1.90¢ @ 2¢; No. 24 Sheet, 2 70¢, all 60 days, 2 % off for cash; Skelp Iron, 1.65¢ @ 1.70¢ for Grooved, and 1.85¢ @ 1.90¢ for Sheared, four months, 2 % off for cash.

Nails.—The Nail trade continues very dull, with but little prospect of any immediate improvement. However, dullness nearly always obtains at this particular time, hence the present lull creates no surprise. Manufacturers continue to complain of prices as being very unremunerative, and in this respect it is said the Wire Nail is just about as bad as the Cut-Nail trade. Prices remain unchanged: Cut Nails, $1.55 @ $1.60 for 30¢ @ 35¢ average, f.o.b. at factory; and Wire Nails $1.75, 60 days, 2 % off for cash. A syndicate by the Wire Nail manufacturers is still favored, and in due time the movement recently taken with this end in view will no doubt be accomplished.

Wrought-Iron Pipe.—There is no improvement to report in the demand, nor is it likely that there will be until toward spring. While some of the mills are pretty well employed, they are the exception, not the rule. The regular syndicate prices are generally quoted, but these are discarded when anything like a desirable order makes its appearance; manufacturers admit this themselves. It is almost impossible to maintain syndicate prices when the market is in its present condition, buyers having the advantage.

Structural Material.—There is not much new offering at present, but a good deal in sight, some of which will come out early in the new year; however, notwithstanding new business is a little scarce at present, the structural mills continue to have about all they can do closing up old contracts. Prices remain unchanged; Beams and Channels, 3.10¢; Angles, 2¢; Tees, 2.50¢ @ 2 60¢; Universal Mill Plates, Iron, 2¢ @ 2.05¢; Refined Bars, 1.80¢ @ 1.85¢.

Steel Plates.—There is a continued fair business, and the mills have about all they can do. Prices remain unchanged, as follows: Fire Box, 3.75¢ @ 4.25¢; Tank, 1.95¢ @ 2.10¢; Shell, 2.15¢ @ 2.20¢; Flange, 2.35¢ @ 2.40¢.

Merchant Steel.—There is nothing new or important to report; demand continues fairly active, while prices remain unchanged: Crucible Tool Steel, 6¢ @ 7¢; do. Spring, 4¢; do. Machinery, 4½¢ @ 5¢; Bessemer Machinery, 2.10¢ @ 2.20¢; Toe Calk, 2.30¢ @ 2.40¢; Tire Steel, 2.10¢ @ 2.20; Steel Bars, 1.80¢ @ 1.85¢.

Wire Rods.—There appears to be no demand, and in the absence of sales it is difficult to quote. Prices may be quoted nominally at $34 @ $35, cash, f.o.b. at makers' mill.

Old Rails.—There is little demand for Iron Rails at present, either here or in the valley, and prices are weak; may be quoted nominally at $23 @ $23.50. There is some inquiry for Steel Rails, and we are advised of a sale of 2500 tons, mixed pieces, at $17.25.

Barb Wire.—Prices remain unchanged. Painted, $2.45; Galvanized, $2.95, f o.b. at factory in Pittsburgh or Cleveland districts. A Pittsburgher who was in Chicago last week, and who had a conference with one of the chiefs of the syndicate, states that he was informed that there was no truth in the rumors that there was disaffection among the members of the syndicate, but that, on the contrary, the syndicate is in a most satisfactory condition.

Billets and Slabs.—There is a continued fair business, and the mills both here and at Wheeling are pretty well sold up, although there is always some of them soliciting business. Prices remain about as last quoted, $24 @ $24.50. f.o.b. at mill, although, as noted in our last report, some sales were made a couple or three weeks ago as low as $23.75. It is doubtful if an order could be placed here now below $24, at which price it is claimed that it is all the manufacturer can do to get a new dollar for an old one. It is claimed that the prices now obtaining afford little or no margin for profit under the most favorable circumstances.

Railway Track Supplies.—There is a fair demand. No change in prices. Spikes, 2.15¢, 30 days, f.o.b. at works; Splice Bars, 1.70¢ @ 1.80¢; Track Bolts, 2.65¢ with Square and 2.75¢ with Hexagon Nuts.

Steel Rails — Continue firm at the syndicate price, $30, cash, f.o.b. at mill. Several good-sized orders have been placed here during the week, and the outlook for next year is regarded as being very encouraging.

Ferromanganese.—Sales of 80 per cent. domestic at $65, cash; this has been the ruling price here for several weeks.

Old Material.—There is not much doing. Very little change in prices: No. 1 Railroad Wrought Scrap, $19.50, net ton; Cast Scrap, $13, gross ton; sales of Steel Rail and Bloom Ends at $18.50, gross.

(*By Telegraph.*)

James P. Witherow has been granted an extension of four years.

Cincinnati.

(*By Telegraph.*)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, December 2, 1891.

Pig Iron.—There has been no unusual animation in the Iron trade during the past week, there being no disposition on the part of buyers to anticipate their wants, but on the other hand there is no urgency to sell, such as would result in depressing prices. Some of the furnaces are not selling all of their current production, but expect a better demand after the close of the year. Many of the furnaces have orders booked to the extent of their production the first half of next year, but have had deliveries postponed, and for want of cars have been unable to deliver promptly, so that there is much Iron which they would be glad to sell for early delivery. The sales have been mainly from one to four carloads, but in one case reached 300 tons, and include Gray Forge No. 2 and No. 3 Foundry and some Charcoal Irons. It may be stated that furnaces in the Pittsburgh district have been making a grade of Iron which takes the place of Southern Gray Forge and which is sold to consumers in the northern part of this State at prices which bar out the Southern Iron, the freight being against the latter. There is nothing new on the consumptive side of the market, but consumption is decreasing in many lines, as usual at this season of the year. Not much is expected of the trade this month, but taking it all in all, there is a pretty liberal distribution of Pig Iron, and the outlook is promising for the future. The country has only begun to feel the beneficial effects of its abounding crops, and the ensuing year cannot be otherwise than prosperous in general, in which prosperity Iron will participate to a liberal extent.

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, November 30, 1891.

Pig Iron.—There has been no particular change since our last report. Sales have been limited to carload lots and up to 100-ton quantities for prompt delivery. Furnaces are not pushing the sale of their product beyond the end of this year, although it has been reported that offers have been made for next year's delivery at prices that are lower than those quoted below. Concessions from the prices quoted herewith are requested in nearly every instance where sales are being negotiated, and as a rule are allowed rather than endanger the prospect of making a sale. When this condition of affairs will change it is difficult to determine. The outlook so far as the country in general is concerned is particularly encouraging, but at the moment the Iron trade is much depressed and will doubtless continue so until after the new year. The following prices are quoted, which are for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	$15.25 @ $15.50
Southern Coke, No. 2 Foundry,	14.25 @ 14.50
Southern Coke, No. 3 Foundry,	13.50 @ 13.75
Gray Forge	13.00 @ 13.25
Southern Charcoal, No. 1 Foundry	17.00 @ 17.50
Southern Charcoal, No. 2 Foundry	16.50 @ 16.75
Missouri Charcoal, No. 1 Foundry	15.50 @ 16.00
Missouri Charcoal, No. 2 Foundry	15.00 @ 15.50
Ohio Softeners	17.75 @ 18.75

Bar Iron.—A steady trade is enjoyed in this department of the Iron trade. Car manufacturers are very busy, and inquiries indicate continued activity in this line. Prices are firm at 1.75¢ for carload lots on cars at East St. Louis. Small lots from store command 1.85¢ @ 1.90¢, according to quantity.

Barb Wire.—A fairly active trade is reported at unchanged prices. The opinion is freely expressed that higher prices will shortly be in order, and indications certainly point that way. Prices at this writing are as follows: Painted, 2.70¢; Galvanized, 3.20¢; terms 60 days, or 3 % discount for cash in ten days.

Wire Nails.—There has been no change either in price or demand since our last report. A limited business is transacted at the following prices: Lots from mill, $1.95; from store, $2.10 @ $2.15.

(*By Telegraph.*)

Metals.—The Pig Lead market has not moved since our last report. Offerings are free at 4.10¢, but buyers cannot be found at this figure, and it is doubtful if 4.05¢ would result in making a sale. Smelters refuse to allow concessions, and buyers will not trade at present prices. This is the situation in a few words. Spelter is about the same as last quoted. Offerings are free at 4.40¢, but the consumptive demand is light, and even this low figure fails to capture a purchaser. Lower prices are expected in the near future.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., December 1, 1891.

The last month of the year brings us face to face with the fact that prices are still at the very lowest point, although it is some encouragement to believe that they are on the eve of improvement. The first step to that much to be desired consummation is more business. The remark has been often heard within the past day or two that there is a better demand, but prices are no better. That should not surprise anybody; there must be more business, and a good deal more, before prices are affected. Low prices result from a scarcity of orders, higher prices from a multiplicity of orders. The improvement starts right: 1, better financial conditions based on good crops, and a period of enforced economy; 2, a gradually increasing demand starting at extremely low prices, and, finally, there will be a better range of prices in accordance with the character and extent of the demand. Meanwhile general business appears to be picking up, and especially as regards the railway interests. A great many thousand cars have been ordered within the past few days, quite a fair business has been done in Steel Rails, and some improvement in the demand for locomotives. On the whole, the developments of the past couple of weeks have been unusually favorable, not only for what has been actually closed, but for what is indicated in the near future. The movement may not take a very pronounced form at this late season, but there need be no hesitancy in saying that the conditions are the more encouraging as they become better understood.

Pig Iron.—There is little or no change in the general position, and none whatever as regards prices. There is more inquiry, perhaps, and more disposition to do business at inside figures, but for the present it is out of the question to think of an advance. The immense output imparts a sense of security to consumers that is hard to disturb, and so long as indications of a full supply continue it will be difficult to make buyers believe that prices are likely to be higher. That, however, no one expects, the near approach of the holidays, with the consequent temporary suspension of work, being an insurmountable barrier to any immediate movement of that kind. There is an encouraging degree of steadiness, nevertheless, and while there are no

signs of an advance, the chances in the opposite direction are still more remote, with the one exception noted. At full quoted rates there is plenty of Iron, the greatest plenty being of the lower grades at the lower prices, but even these are so well held that orders which have been on the market for weeks are still unfilled, because the limits are a few cents below ordinary quotations. Under these conditions it is quite possible that a very slight variation in supply or demand might turn the scale in either direction, although the general idea is in favor of improvement, providing the accumulations during the next 60 days are not too heavy. The course of the market, therefore, will be watched with unusual interest during the next few weeks, and as the tendency is to go with the tide prices may advance more sharply than is expected if they once get started in that direction, and, by the same rule, the longer they remain in the rut they have been in so long the harder they will be to get out of it. The strong feature is the anticipated increase in consumption, based on large orders known to have been distributed recently for railway equipments and others that are to be given out within a very short time, besides a heavier demand from consumers generally. In the meantime quotations remain as before, viz.:

Ohio Softeners, No. 1x	$18.75	@	$19.00
Ohio Softeners, No. 2x	17.75	@	18.00
Standard Penna, No. 1x	17.50	@	18.00
Standard Penna, No. 2x	16.00	@	16.50
Medium Penna, No. 1x	17.00	@	17.25
Medium Penna, No. 2x	15.75	@	16.00
Plain No. 2	15.00	@	15.25
Virginia, No. 1x	17.00	@	17.25
Virginia, No. 2x	15.50	@	16.00
Standard Neutral All-Ore Forge	14.25	@	14.75
Ordinary Forge Cinder mixed	13.50	@	14.00
Hot-Blast Charcoal	20.00	@	22.00
Cold-Blast Charcoal	24.00	@	27.00

Ferromanganese.—No demand of any importance, although there are sellers of 80 % at $61.50 @ $62, duty paid.

Steel Rails.—Nothing of special importance has transpired since the sales noted a week ago. There is a great deal of inquiry, however, and prospects are considered to be quite encouraging, although only small and medium sized lots may be taken for immediate delivery. Prices are steady at $30, at mills, with all sales at that figure for standard sections.

Steel Slabs.—Market unsettled, but on the whole a trifle steadier. Sales of Nail Slabs have been made within the past week at the lowest figures on record, and although there are still several mills that are very anxious for business, it is hardly likely that the purchase could be duplicated. But in times like these the only way to test the matter is to make a bid. The usual asking prices are $26.25 @ $26.50, Schuylkill Valley or equivalent points, or $25.75 @ $26.25, Susquehanna, but it is not unlikely that bids at less money from desirable parties would meet with prompt acceptance, as there is an immense capacity, while each concern for itself is anxious to keep in operation.

Muck Bars.—There is practically no demand, so that prices are all more or less nominal. Sellers ask from $26.25 to $27, delivered, but there is no business worth naming.

Bar Iron.—The feeling is a little stronger, owing to a moderate increase in the demand, but prices do not show any quotable advance. The large orders for cars have been so distributed that none of the shops are at all crowded, and as they were taken at low prices, the builders necessarily require material at proportionate rates. Moreover, the quantity awarded to each builder is very small compared with the total, so that the effect upon prices is hardly perceptible. The distribution is said to vary from 100 cars up to 2000 each, and includes in this State shops at Catasauqua, Berwick, Watsontown, Milton, York, Erie, and perhaps one or two others, but Indiana, Michigan, and even St. Louis received quite a batch of orders, and acceptable as they have been, builders are still inclined to say, as was said in regard to the loaves and fishes, "What are these among so many?" However, the Scripture miracle may, perhaps, be repeated, and before long each one find they have enough and to spare. Meanwhile prices remain as before, 1.60¢ @ 1.62½¢ at mills in the interior, and 1.70¢ @ 1.75¢ for city deliveries.

Skelp Iron.—There is not much demand, although a few lots have been taken at about 1.70¢, delivered, with a chance that even that low figure would be shaded on offers for large lots.

Plates.—Not much doing except in small lots, and mills generally are running pretty close to the end of their orders, although there is enough to employ them until the holidays. There is some inquiry for fair-sized lots, but at the moment there is nothing that can be called specially encouraging as regards large work. Prices are unchanged, and on the whole fairly steady at about the following figures asked:

	Iron.	Steel.
Tank Plates	1.90 @ 2.00¢	2.00 @ 2.10¢
Refined	2.20 @ 2.30¢	2.10 @ 2.20¢
Shell	2.30 @ 2.40¢	2.25 @ 2.35¢
Flange	3.20 @ 3.30¢	2.50 @ 2.75¢
Fire-Box	4.00 @ 4.25¢	3.00 @ 3.50¢

Shapes.—There is nothing in the market beyond small orders, and no inquiries likely to denote much improvement in the immediate future. Mills are working to some extent on old orders, and for the present they appear to have enough to keep their machinery in motion, but no activity. Meanwhile prices are a little irregular and are usually quoted about as follows: Angles, 1.95¢ @ 2.05¢; Sheared Plates, 1.90¢ @ 2¢, and in some cases equal prices, to about $\frac{1}{10}$¢ more, for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—The demand is only moderate, but mills are running full, and in some cases stocking up a little, preparatory to the usual Christmas holidays. Prices about as follows for best makes:

Best Refined, Nos. 14 to 20	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24	3.10¢ @ 3.15¢
Best Refined, Nos. 25 to 26	3.20¢ @ 3.30¢
Best Refined, No. 27	3.40¢ @ ....
Best Refined, No. 28	3.50¢ @ ....

Common, ¼¢ less than the above.

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ½¢ lower than are here named:

Best Soft Steel, Nos. 14 to 20	3¢ @ 3¼¢
Best Soft Steel, Nos. 21 to 24	3¼¢ @ ....
Best Soft Steel, Nos. 25 to 26	3¾¢ @ ....
Best Soft Steel, Nos. 27 to 28	4¢ @ ....

Best Bloom Sheets, ¼¢ extra over the above prices.

Best Bloom, Galvanized, discount	@ 67½ %
Common, discount	@ 70 %

Old Material.—A little better demand is reported, and for good qualities prices are about as follows, varying according to point of delivery, &c.: Iron Rails, $21.50 @ $22.50; Steel Rails, $16 @ $17, delivered; No. 1 Railroad Scrap, $20.50 @ $21, Philadelphia, or for deliveries at mills in the interior $20.50 @ $21.50, according to distance and quality; $14.50 @ $15.50 for No. 2 Light; $14 @ $14.50 for best Machinery Scrap; $13.50 @ $14 for ordinary; $14.50 @ $15.50 for Wrought Turnings; $10 @ $10.50 for Cast Borings, and nominally $23 @ $25 for Old Fish Plates, and $16 @ $16.50, delivered, for Old Car Wheels.

Wrought-Iron Pipe.—Demand fair and discounts nominally unchanged, although there is the usual cutting among jobbers. Nominal rates are as follows:

Butt-Welded Black	57½ %
Butt-Welded Galvanized	47½ %
Lap-Welded Black	67½ %
Lap-Welded Galvanized	55 %
Boiler Tubes, 2½ inch and under	52½ %
Boiler Tubes, 3 to 6 inch	60 %
Boiler Tubes, 7 inch and larger	55 %

Louisville.

LOUISVILLE, KY., November 30, 1891.

Pig Iron.—There is a fair demand for Iron where surnaces are willing to sell for six months of next year, though prices show no improvement over a basis of $10 for Gray Forge at furnace. Consumers are willing to purchase for six months beginning in January, but there few inquiries for immediate delivery. One lot of 300 tons No. 2 Foundry controlled by outside parties was sold at a basis of $10.50, furnace. Car Wheel Irons are still offered very low for this year, but furnaces are talking of $16 at furnace and upward for deliveries beginning after January, though prices for immediate shipment are as low as at any time made. Old Wheels are selling on a basis of $16.25, cash, cars Louisville. Current quotations are as follows:

Southern Coke, No. 1 Foundry	$14.50	@	$15.00
Southern Coke, No. 2 Foundry	13.50	@	14.00
Southern Coke, No. 3 Foundry	13.00	@	13.50
Southern Coke, Gray Forge	12.50	@	13.00
Southern Charcoal, No. 1 Foundry	16.00	@	17.00
Southern Car Wheel, stand. br'nds	18.00	@	20.00

Cleveland.

CLEVELAND, November 30, 1891.

Iron Ore.—Furnacemen are still engaged in picking up odds and ends here and there in order to complete their stocks, but otherwise the market is quiet. Dealers say to-day that a number of inquiries have been received regarding next season's prices, but that there is little likelihood of any actual sales for several months. It seems probable that transportation rates will be higher next season than they were this, and that Ore will cost a little more. Looking back over the past season, it seems evident that the furnacemen have not purchased beyond their probable wants, as many of them have done in former years. There will be little or no unsold Ore on the docks when the final cargoes are unloaded this week, for no more Ore will be shipped from the upper lakes this year with the exception of a few thousand tons to come by rail. About 30,000 tons were unloaded at lower lake ports last week, against 100,000 tons and more for the corresponding week in 1890. The shipments to the furnaces were about the same as last year. The mining companies believe that by the beginning of navigation in 1892 there will be only a trifling amount of Ore on the docks, and this now seems entirely probable. If this should be the case, the market will open next year with clean balance sheets, and buyers and sellers can come to an understanding with much less than the usual delay.

Pig Iron.—Trade for the past few days has been active, although prices are about the same as for several weeks past. A good demand for Foundry Iron is reported, although Bessemers do not seem to improve. Dealers anticipate better prices for many grades of Iron before Christmas. Strictly local quotations are as follows:

Nos. 1 to 6 Lake Superior Charcoal	$18.50	@	$19.00
Nos. 1, 2 and 3 Bessemer, per ton	16.00	@	16.25
No. 1 Strong Foundry, per ton	16.20	@	16.70
No. 2 Strong Foundry, per ton	15.20	@	15.70
No. 1 American Scotch, per ton	16.20	@	16.70
No. 2 American Scotch, per ton	15.20	@	15.70
No. 1 Soft Silvery, per ton	16.50	@	17.50
Mahoning and Shenango Valley Neutral Mill Irons, per ton	14.00	@	14.50
Mahoning and Shenango Valley Red Short Mills, per ton	14.50	@	15.00

Old Rails.—The market is a little weaker. Sales of Old American at $22.50 ℔ ton are reported.

Manufactured Iron.—Common Bar is in only fair demand at 1.65¢ @ 1.70¢. Sheets are very scarce and in excellent demand, especially the better varieties for stove-pipe use.

Nails.—There is no change in the market, which has not been very firm for several weeks. Steel Wire Nails are quoted at $1.90 in stock and Cut Nails at $1.70.

Scrap.—The market is not very active, but prices are the same—$19.50 for No. 1 Railroad Wrought and $13.50 for Cast Scrap.

Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date November 30, 1891, say: While the demand for material does not seem to change to any degree, neither does the firmness. That prices cannot be forced a notch lower is generally conceded by both buyers and sellers, but, notwithstanding this and also a much easier money market, that buyers do not make larger purchases and feel safe to anticipate their requirements further ahead is very noticeable and not comforting to the sellers. A steady undercurrent of small orders for nearly all grades continues, and particularly the foundry trade for good Southern Coke Irons. Lake Superior Charcoal at the present is absolutely stagnant for orders of any magnitude. This is attributed largely to the closing of lake navigation, however, and except for very active markets in years past is only a repetition, but rather decidedly emphasized We repeat quotations;

Lake Superior Charcoal, all numbers	$17.50 @ $18.00
Lake Superior Coke Foundry, all ore	17.50 @ 18.00
Lake Superior Coke, Bessemer	16 50 @ 17.00
Ohio Blackband (40 per cent.)	18.00 @ 18.50
Southern No. 1	16.25 @ 16.50
Southern Gray Forge	14.00 @ 14.50
Jackson County (Ohio) Silvery.	18.25 @ 18.75

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, December 2, 1891.

American Pig.—Complaints continue to be heard of low offerings of Southern Irons, one of the leading companies in the Birmingham district being mentioned as a leader in this movement. The market, on the whole, is very quiet, and sellers generally do not look forward to much additional business during the current month. We quote Northern brands, $16.75 @ $18 for No. 1; $16 @ $16.50 for No. 2, and $14 @ $14.50 for Gray Forge. Southern Iron sells at $16.25 @ $17 for No. 1; $15.50 @ $16 for No. 2; $14.50 @ $14.75 for No. 3 Foundry, and $14.25 @ $14.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—In Spiegeleisen the market has been disturbed by reports of very low offerings of domestic 20 % Spiegel, the figure mentioned being $23, delivered at buyers' mill. In Ferromanganese importers claim that foreign makers have advanced prices materially, owing to its scarcity and the high cost of ores. Still, it is reported that there have been offered to a mill in the Ohio Valley for several hundred tons of 80 % Ferro $62, delivered, for foreign. This would be equivalent to less than $60 at tidewater. There have been reports that the mine which furnishes the principal source of supply of one of the leading domestic makers is approaching exhaustion.

Billets and Rods.—Pittsburgh continues to be the storm center, the low figures made in that market having a strong influence in this section. We note the sale of 2000 tons of foreign Billets, March, April and May delivery, for re-export, at private terms. Open-hearth stock has been offered at low figures lately, $28, delivered, being mentioned for this class of material, which, however, brings as much as $40 ₱ ton to works of established reputation. We quote: Domestic Billets, $26.50 @ $27, delivered; foreign Billets, nominally, $31 @ $31.50, and domestic Rods, $36.50 @ $37.50, tidewater.

Steel Rails.—No sales of any consequence are reported by Eastern mills for the week past, and the market is quiet but steady at $30 at mill. A meeting of the Rail manufacturers is to be held next week. The mills have been asked to report what quantities have been sold by them for 1892 delivery. It is believed that the quantity will prove to be quite large. Attention is called to one feature which characterizes the trade this year: Quite a good many sales have been made with an option to the buyer to increase the order at any time up to the close of the year. It is believed that many will avail themselves of these options.

Manufactured Iron and Steel.—As yet none of the orders for Plates for the ships which are to be built in accordance with contracts closed with the postal authorities have been placed. The quantity in the aggregate should be large, 30,000 tons being mentioned as the figure probably required. In other grades of Plates the market continues in a demoralized condition. In Structural Material, two contracts, aggregating about 1000 tons of Beams, have been placed during the week, and it is reported that the Delaware-Lackawanna building has also been taken. There are some other large orders in the market which will probably be placed at an early date. There is no foundation for the rumors that irregularities have occurred in American Beams. Bridge makers report a very good volume of orders from railroads for moderate-size spans, but complain bitterly of the very low figures at which work of this kind is taken. We continue to quote: Angles, 1.90¢ @ 2.10¢; Sheared Plates, 1.85¢ @ 2.25¢; Tees, 2.40¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 1.9¢ @ 2.1¢ for Tank; 2.15¢ @ 2.30¢ for Shell; 2.40¢ @ 2.65¢ for Flange; 2.60¢ @ 2.75¢ for Marine, and 3¢ @ 3.25¢ for Fire Box, on dock. Bars are 1.7¢ @ 1.9¢, on dock. Scrap Axles are quotable at 2.15¢ @ 2.20¢, delivered. Steel Axles, 2.15¢ @ 2.25¢, and Links and Pins, 2.15¢ @ 2.20¢; Steel Hoops, 2¢ @ 2.5¢, delivered.

Track Material.—We quote 2.15¢ @ 2.25¢ for Spikes, 1.70¢ @ 1.90¢ for Fish Plates, and 2.80¢ @ 3¢ for Bolts, delivered.

Merchant Steel.—We quote Hot-Rolled Shafting 2¢ @ 2.10¢; Machinery, 2.10¢ @ 2.25¢; Tire, 2.15¢ @ 2.25¢, and Toe Calk, 2.20¢ @ 2.30¢, delivered.

Old Material.—Bids are being asked for Old Iron Rails, without, however, drawing out buyers, who are indifferent. No business of any consequence is being done in Old Steel Rails. In Scrap Iron we note the sale of one lot of 400 tons at $19.25, Jersey City, and one lot of 200 tons at $18.50 @ $19, delivered on lighter, both for No. 1.

The Passaic Rolling Mill Company of Paterson, N. J., of which W. O. Fayerweather is vice-president and treasurer, are now rolling 20 inch Steel Beams, thus completing the list from 4-inch to 20-inch Steel. They are the only mill now, except the Carnegie's, which rolls so large a Steel Beam.

In the address by R. W. Hunt, president of the American Society of Mechanical Engineers, on "The Evolution of American Rolling Mills," a reference, in that part relating to the Garrett rod mill, is made to John Davis of Cleveland as the inventor of the first repeater. It should have read John Bevis.

Coal Market.

The Anthracite Coal trade is dull, though nominally active under the stimulus of cold weather. Individuals are underselling the companies 40¢ a ton for Stove, the October circular price being $4.40, alongside, whereas actual sales are made at $4, with other sizes in proportion. Restriction is now the rule, this being necessary at this season of the year, when navigation is closed and the amount ordinarily going West thrown back on the market for Eastern consumption. The Reading Company announce that hours of labor at the mines are reduced, beginning December 1, pursuant to an agreement made at the recent meeting of sales agents in New York. It is stated, further, that "the Coal trade is in excellent condition, the absence of the accumulation of Coal at the mines and at points of consumption, together with the prospect of severe and prolonged cold weather, insuring profitable results for both the producing and carrying interests for some time to come."

Every one of the Anthracite and Bituminous Coal-carrying railroads reporting shows a large increase in the respective tonnages this year, the list being led by the Reading Railroad with nearly 1,000,000 tons ahead of last year to the corresponding date, while the Pennsylvania Railroad follows with 530,000 tons increase, the Beech Creek Railroad 422,000 tons increase, Norfolk and Western Railroad 408,000 tons increase, Central Railroad of New Jersey 273,756 tons increase, Pennsylvania Coal Company 253,000 tons increase, Chesapeake and Ohio Railroad 273,000 tons increase, Clearfield 47,000 tons increase.

The total Coal production for the week ending November 21 was 994,000 tons, and for the year 35,727,964 tons, an increase of nearly 4,000,000 tons compared with last year.

Bituminous Coal is firm, but delay is still experienced in making shipments to fill orders.

The Beech Creek Company claim a great triumph in completing their lines from Clearfield in conjunction with the Reading and Western connections to form "the greatest and most complete freight line in the world."

Pottsville papers speak of the success of the new washeries erected in the Culm banks. One in Schuylkill County that cost $22,000 yields 100 cars of good Coal a day, dumped into the waste before improved mining machinery was known. Another washery shipped nearly 6000 tons in a single month. The average percentage of yield in the various banks is about 50 %—Buckwheat and Pea, 25 %; Chestnut, 17 %; Stove, 8 %.

About 10,000,000 bushels of Coal have been shipped from Pittsburgh down the river toward Cincinnati since the rise.

The Erie Railroad gained over 12 % in its Coal tonnage the past year, and earnings from that source increased close to $1,000,000. Reading's tonnage for the present month aggregated 10,332,460 tons, against 9,494,591 tons to corresponding date in 1890.

The Alan Wood Company, Philadelphia, announce that they have just completed an entirely new and completely equipped three-high mill specially adapted for rolling light plates and sheets of steel. This, in connection with their former large facilities, will enable them to fill all orders promptly. The company are also cleaning their thin sheets, so that they are absolutely free from soot, which until recently was unavoidable when they were dusted with charcoal to prevent sticking when rolling several sheets together. This is a feature of importance which the trade will doubtless appreciate.

Metal Market.

Copper.—The market is wholly unchanged. Consumers are taking supplies only as imperative wants necessitate, and while outward appearances suggest that the leading producers are indifferent, the fact remains that there is an abundance of Copper to sell and that buyers have a voice in fixing the price. Spot parcels of Lake Superior Ingot are valued at 11¼¢ @ 11½¢. Bids of 11¢ have been refused within a few days. It is understood that 11¢ has been offered for fair-sized quantities deliverable during the first half of next year, and 11½¢ for 500,000 lb of Wire Bars for delivery nine months ahead. Casting Copper is in practically the position outlined last week, with prices nominal in a great measure.

Pig Tin.—Speculation in this metal has been on a limited scale, and the number of operators who will trust their fortunes to futures, puts and calls has diminished as well. The speculative element, as a matter of fact, has dwindled down to very narrow proportions. For trade account and consumption the movement has been slow, as usual at this season of the year, so that altogether the market presents an extremely tame appearance. Prices have receded somewhat, but hardly as much here as in the London market, probably for the reason that local market values have been relatively lowest for a week or ten days. Shipments from the Straits during November were 2050 tons to Great Britain and America and 425 tons to the Continent, against 3000 tons and 460 tons respectively in October. At the close of the week 19¢ @ 19.90¢, cash, was quoted for 10-ton lots, and jobbing parcels were valued at 20¢ @ 20.15¢, as to terms. The statistical position, as posted on the Metal Exchange, is as follows:

	Oct., 1891.	Nov., 1891.	Nov., 1890.
Shipments:	Tons.	Tons.	Tons.
Straits to Great Britain	2,200	1,350	1,650
Straits to America	825	575	950
Straits to Continent	475	525	350
Total Straits	3,500	2,450	2,950
Australia to Great Britain	450	500	475
Australia to America	50	150	.....
Total Australia	500	650	475
Total shipments	4 000	3,100	3,425
Deliveries from London	2,030	1,870	1,540
Deliveries from Holland	890	510	910
Total deliveries	2,920	2,380	2,450
Of which shipped to America	480	570	150
	Nov. 1, 1891.	Dec. 1, 1891.	Dec. 1, 1890.
Stocks:	Tons.	Tons.	Tons.
Foreign Tin in London	2 595	3,562	2,877
Second hands in Holland	570	1,260	1,610
Spot stock in America, estimated	1,700	*1,750	1,650
Total spot stock	4.865	6,512	6,137
Afloat for Great Britain	3,232	2,340	3,292
Afloat for Holland	2,080	1,480	1,260
Afloat for America	1,930	1,720	2,240
Total afloat	7,242	5,540	6,752
Total visible supply	12.107	12,052	12,389

* Includes 450 tons arrived but not entered.

Pig Lead.—Business has been of very limited proportions throughout the week, and no sign of inclination on the part of either buyers or sellers to make any decided move is visible at this writing. Prices are a shade lower than they were a week ago, with 4.25¢ @ 4.30¢ the popular quotation for carload lots, but 4.20¢ the best bid, and some business reported at the last-named price yesterday.

Spelter.—It is understood that orders are being placed for some Western brands for delivery next year, but no particulars as to the extent of the business or the prices are divulged. Carload lots for prompt shipment are now generally quoted at 4.80¢, and the undertone is apparently a shade steadier.

Antimony.—The market remains firm, but quiet. Hallett's is quoted at 12½¢, LX at 13½¢ @ 14¢ and Cookson's at 15½¢, in wholesale quantities.

Tin Plate.—There have been further moderate purchases of light Plates for future delivery, but the entire movement makes a modest showing. Of spot stock the sales are moderate. Prices have undergone little change, and, except on Bright Charcoals, the advantage seems to be with the buyer. Purchases of future Cokes were for delivery up to and including March and most for manufacture of small cans, in which 85 @ 95 lb stock can be used Fruit canners have taken some standard 14 x 20 on the spot at prices below present import cost. Roofing plates are still lower here than in the foreign market. We quote: Coke Tins—Penlan grade, IC, 14 x 20, $5.25; J. B. grade, do., $5.35; Bessemer do., $5.30; Siemens Steel, $5.45. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.70 @ $5.75; Siemens Steel, IC basis, $5.80 @ $5.85; IX basis, $6.85 @ $7. IC Charcoals—Melyn grade, $6.50; for each additional X add $1.50; Allaway grade, $5.85; Grange grade, $5.90 @ $5.95; for each additional X add $1. Charcoal Ternes—Worcester, 14 x 20, $5.75; do., 20 x 28, $11.50; M. F., 14 x 20, $7.45; do., 20 x 28, $15; Dean, 14 x 20, scarce; do., 20 x 28, $10.70; D. R. D. grade, 14 x 20, $5.25; do., 20 x 28, $10.10; Mansel, 14 x 20, $5.50; do., 20 x 28, $10.35; Alyn, 14 x 20, $5.50; do., 20 x 28, $10.50; Dyffryn, 14 x 20, scarce; do., 20 x 28, $11.10. Wasters—S. T. P. grade, 14 x 20, $5; do., 20 x 28, $9.85; Abercarne grade, 14 x 20, $4.90; do., 20 x 28, $9.70.

I. J. Pope's Sons & Co. have removed to 292 Pearl street, where they will engage in a strictly brokerage business in Tin and other Metals. The firm have secured the services of J. J. Archer, who is well and popularly known in the trade.

Financial.

The Fifty-second Congress will deal with important financial questions, but the coming together of that body on Monday next is not regarded with apprehension. Of the three prominent candidates for speaker, Mills of Texas, Crisp of Georgia and Springer of Illinois, it is not supposed that either would appoint a committee favorable to unlimited silver coinage. Money continues extremely easy. Even in Boston there is a plethora of funds. Foreign trade is in good condition. In spite of the heavy specie exports in October the United States exported in merchandise and produce during that month an excess of over $36,000,000, compared with the imports, the aggregate exports on account of commodities being $102,900,000 For ten months there is a balance of trade amounting to $101 000,000, against $15,000,000 for the same period last year. Further imports of gold bring up the total since September 12, when the return movement commenced, to nearly $25,500,000, and $1,500,000 is now on the way. The quiet flow of events was disturbed by the disastrous failure of the brokerage firm of Field, Lindley, Wiechers & Co., attended with an alleged criminal hypothecation of stocks. A careful estimate of the net loss which will probably result is about $800,000. Assets are merely nominal. President Dillon stated that the bonds were rehypothecated for an excess of about $100,000 over the amount which the company had borrowed. In the case of S. V. White, who failed a few months ago, the creditors accepted 50 cents on the dollar. Despite the generally favorable outlook above noted, current trade is moderate and speculation tame, aside from a corner in November corn, which sent prices kiting up to 90¢ ₱ bushel, the highest point for years. It is reported that ex-president Andrews and the New York Steam Company have transferred to the New York Gaslight Company in settlement of obligations, the equivalent of $3,000,000, including $500,000 in real estate. The former will reorganize. The stock market was favorably influenced by the turn of affairs in the coal trade, but the failure of Field, Lindley & Co. caused a pressure to sell and some reaction in prices. The Erie directors declared a dividend of 3 % on the preferred stock at the annual meeting and earnings of St. Paul, Atchison, Topeka and Santa Fé, Union Pacific and almost all the Western roads were reported as exceptionally good. It was reasoned that December interest and dividend payments would stimulate the demand for bonds. Railroad stocks were dull and steady. Government bonds were firm, at quotations as follows:

U. S. 4½s, 1891, extended	100½
U. S. 4s, 1907, registered	116¼
U. S. 4s, 1907, coupon	117¼
U. S. currency 6s	108

The general markets were without special animation, aside from speculation in grain. Breadstuffs at the close were lower on account of increasing supplies at the West and on the seaboard. Oats were an exception to the general weakness, and there was a more active demand for flour. There are increasing offerings of ocean tonnage, through a number of tramp vessels arriving, while there is a let up on the pressure of breadstuffs, cotton and other movements; therefore shippers are finding easier rates. Room for cotton storage in New York is badly wanted, as the warehouses now contain 250,000 bales. Exports of provisions are heavy, but not equal to last year's. Prices are lower. Cotton is steady, as it is believed that supplies will now fall off. Most of the trade have settled into the belief that the crop will exceed 8,000,000 bales.

The bank statement was favorable, showing an increase in reserve of $1,559,600, which brings the surplus up to $14,882,350, which is an unusally strong position for this season of the year. The gain in cash was $2,807,400, of which $2,188,300 was in legal tenders. Loans were expanded $3,848,400 and the deposit line increased $4,991,200. The loan market was moderately active. Time loaning rates were steady. Current quotations are 4 @ 4½ % and 4½ @ 5 %, according to the nature of the collateral offered. In commercial paper the volume of business is slowly increasing, but the supply of first-class paper is light. The Chicago *Inter-Ocean* says of the monetary situation in the West: "An increase in the requirements of grain receivers and operators is the monotonous report made at bank counters. Considerable Chicago capital has already been placed on wheat at Duluth and other closed ports, and evidences are abundant that our elevators will soon begin to fill up for the winter. Assurances are repeated that the packers have commenced to arrange for funds for an active season." The heaviest shipments were made to New Orleans, where the cotton movement is exceptionally active.

Sterling exchange is dull and steady; posted rates $4.84½ @ $4.85.

Exports of merchandise from New York for the week, $8,000,000; imports, $9,140,000.

Imports.

Hardware, Machinery, &c.

Abegg & Rusch, Mach'y, pgs., 30
Boker, Hermann & Co., Arms, cs., 20; Anvils, 112
Brown, V. H. & Co., Mach'y, cs., 2
Baldwin Bros. & Co., Gridirons, 495
Blumenthal & Bros., Hdw., cs., 7
Davis, Turner & Co., Mach'y, cs., 23
Downing, R. F. & Co., Mach'y, cs., 2
Dingelstadt & Co., Mach'y, cs., 5

Erie Dispatch Co., Mach'y, pgs., 35
Folsom, H. & D., Arms, cs., 4
Friedlander & Co., Ironware, cs., 6
Fuchs & Lang, Mach'y, cs., 11
Graef Cutlery Co., Cutlery, cs., 3
Hoe, R. & Co., Mdse., cs., 4
Judd, H. L. & Co., Nails, cs., 4
Kempkes & Co., Mach'y, pgs., 8
Morris Express Co., Cutlery, bx., 1
Peterson, G., Mach'y, pgs., 119
Schoverling, Daly & Gales, Arms, cs., 5
Sheldon, G. W. & Co., Gridirons, 64
Union Chemical works, Mach'y, pgs., 7
Werlemann, H., Arms, cs., 10
Woonton, E., Mach'y, pgs., 8
Order—Mach'y, cs., 7; Rollers, 30

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, December 2, 1891.

Scotch warrants have been neglected and price has receded to 47/. Cleveland eased off to 38/4½ and Hematites to 47/7½, but at the decline there has been a very fair business. Stocks in warrant stores show little change. Scotch increased 52 tons and Cleveland 271 tons last week. There are now 77 Scotch furnaces in blast.

Pig Tin has been dull and prices have receded. Smallness of stocks here and apparent supplies for near future delivery fail to attract outside speculative orders. Demand for consumption is moderate.

Speculation in Copper has been small and prices for Merchant Bar prompts receded to 44. 10/, subsequently recovering part of the loss. It is stated that Copper formerly held by outsiders is now in the hands of dealers. Consumers are buying more freely, present prices being attractive. The properties of the Société des Métaux reported sold to Credit Industriale at small advance on upset price.

Business in Tin Plate is still light. Home demand is extremely light. There is more inquiry from America, but not much business has resulted thus far. Owing to lowness of prices offered many makers have decided to close their works for one month, from the middle of December, but there is no general movement in that direction. Several large makers are opposed to combined action to reduce the output, considering this course not warranted.

Scotch Pig Iron.—The movement of makers' brands is moderate and prices still tend in buyers' favor.

No. 1 Coltness,	f.o.b.	Glasgow	57/
No. 1 Summerlee,	"	"	56/
No. 1 Gartsherrie,	"	"	55/
No. 1 Langloan,	"	"	56/
No. 1 Carnbroe,	"	"	48/
No. 1 Shotts	"	at Leith	58/
No. 1 Glengarnock,	"	Ardrossan	56/6
No. 1 Dalmellington,	"	"	50/
No. 1 Eglinton,	"	"	50/

Steamer freights, Glasgow to New York, 1/; Liverpool to New York, 10/.

Bessemer Pig.—There is a fair business and prices are steady at 48/6 @ 49/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Cleveland Pig.—Business still rather slow, but the market steady at 38/6 for No. 3 Middlesborough, f.o.b.

Spiegeleisen.—Market continues dull with prices in buyers' favor. English 20% quoted at 82/, f.o.b. shipping port.

Steel Rails.—A very quiet market and former prices asked. Heavy sections quoted £4. 2/6 and light sections £5 @ £6, f.o.b. at N. W. England shipping point.

Steel Blooms.—Demand slow and prices nominal. Makers quote £4 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Business moderate and prices in buyers' favor. Bessemer, 2½ x 2½ inches, quoted at £4. 5/, f.o.b. at N. W. England shipping point.

Steel Slabs.—Very little business doing and prices nominal. Bessemer quoted at £4. 5/, f.o.b. at N. W. England shipping point.

Old Iron Rails.—Prices firmly held and the demand somewhat better. Tees quoted at £3 @ £3. 2/6 and Double Heads £3. 2/6 @ £3. 5/, f.o.b.

Scrap Iron.—Rather more doing at old prices. Heavy Wrought Iron quoted at £2. 10/ @ £2. 12/6, f.o.b.

Crop Ends.—Market quiet and unchanged. Bessemer quoted at £2. 12/6 @ £2. 15/, f.o.b.

Tin Plate.—Prices irregular and business moderate. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	14/9 @ 15/3
IC Bessemer Steel, Coke finish	13/ @ 13/3
IC Siemens " " "	13/3 @ 13/6
IC Coke, B. V. grade	12/9 @ ....
Charcoal Terne, Dean grade	12/6 @ ....

Manufactured Iron.—A very fair business passing in most lines at steady prices. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Ordinary Marked Bars	8	10	0	@		.....	
" Common "	6	15	0	@		.....	
Staff. Bl'k Sheet, singles	7	17	6	@		.....	
Welsh Bars (f.o.b. Wales)	5	10	0	@	5	12	6

Pig Tin.—Market closes steady, but rather quiet. Straits quoted at £91. 2/6, spot, and £92. 12/6 for three months' futures.

Copper.—More activity to-day, and market strong at the close. Merchant Bars quoted at £45. 12/6, spot, and £46. 10/, future. Best selected, £49. 10/.

Lead.—Market very quiet, but steady, at £11. 12/6 for Soft Spanish.

Spelter.—Moderate business passing, and the market barely steady at £22. 2/6 for ordinary Silesian.

The Rhode Island Perkins Horseshoe Company Stock.

Maitland, Phelps & Co. of New York, The Rhode Island Hospital Trust Company of Providence and Richardson, Hill & Co. of Boston offer for subscripton $875,000 7 per cent. cumulative preferred stock and $500,000 common stock of the Rhode Island Perkins Horseshoe Company. The authorized capital stock of the company is $2,750,000, of which $1,750,000 is preferred stock. The remainder of the stock now offered for subscription has been taken by the old company at par, in part payment of the transfer of the property to the new company. The preferred stock is entitled to a dividend at the rate of 7 per cent. per annum from July 1 last, payable out of the earnings of the corporation before the common stock gets any dividend. In case of the nonpayment of such dividend to the preferred stock, it remains a charge against the net earnings of the company prior to all rights of the common stock, which is entitled to the surplus earnings of the company in an amount not exceeding 10 per cent., noncumulative. Any surplus over such dividends is subject to equal division between the preferred and common stocks. It is provided that no bond or mortgage can be made upon the property of the company without the consent of 75 per cent. of the stockholders.

An examination of the results of the company made by Stephen Little, lately first vice-president of the Association of American Railway Accounting Officers, shows that the net profits for the five years ending June 30 last were at an average of $262,654 each year, an amount more than sufficient to pay 8¼ per cent. on the preferred stock and 11¼ per cent. on the common stock. We quote as follows from Mr. Little's report: "I find that the net profits of the Rhode Island Horse Shoe Company from the beginning of its operations to June 30, 1890, were $2,722,836.93, and that this amount was clear of all charges for management and other expenses of all kinds, and that the total amount of dividends paid in cash up to that date was $2,152,500. The approximate profits for the half year ending December 31, 1890, which was as far as I could extend my examination, $187,608.20, out of which a still further cash dividend of $157,500 was declared and paid, making the total net profits up to December 31, 1890, $2,910,445.13, and the total dividends to same date paid in cash $2,310,000. The volume of its business in the sales of horse shoes alone, separate from toe calks, for the 12 years ending June 30, 1890, were 2,714,270 kegs, producing a revenue of $10,991,172.22, or an average of about $4.05 per keg. The average cost of production at the mill was $8,278,775.24, as per statement below, leaving a profit of $2,712,396 98 on the output, this for a period of 12 years only, as follows:

Year ending June 30.	Kegs sold.	Gross receipts.	Cost.	Profit.
1879	177,411	$500,542.76	$465,056.05	$125,486.71
1880	237,170	857,313.83	735,705.17	121,608.66
1881	195,382	881,498.46	714,256.30	167,242.16
1882	231,029	1,019,067.34	799,114.50	219,952.84
1883	212,502	994,278.88	736,784.15	257,494.73
1884	230,453	956,407.78	846,036.12	210,371.66
1885	232,151	881,535.87	612,302.66	269,233.21
1886	247,400	924,684.20	700,573.27	224,110.93
1887	238,964	935,097.92	649,618.52	285,479.40
1888	225,067	932,927.65	658,020.10	274,907.55
1889	228,274	944,744.32	675,161.87	269,582 45
1890	258,491	1,073,073.21	786,146.53	276,926.68
Total for 12 yrs.	2,714,270	$10,991,172.22	$8,278,775.24	$2,712,396.98

"The elements entering into this cost may be enumerated as scrap iron, steel, coal and other supplies, labor, cooperage, repairs of tools, machinery, buildings, &c., but it is manifest at a glance that many new improvements and additions to the plant and machinery were sunk in this account, instead of being capitalized or charged to construction."

By a new invention recently made by Mr. Perkins for the manufacture of toe-weight shoes, it is expected that the yearly net profits will be largely increased over and above the general and natural growth of the business. By a resolution of the Board of Directors one-half the amount of all dividends declared on the stocks of the company for the period from July 1, 1891, to July 1, 1892, is payable to stockholders of record January 1, 1892. The subscription list of the stocks of the company, as stated above, entitling the holders to one-half of all the dividends declared thereon out of the earnings of the company for the period from July 1, 1891, to July 1, 1892, will open on December 2 and will close not later than December 9 at the above-named banking houses. Payments to be made as follows: Ten per cent. on application, 20 per cent. on allotment and 70 per cent. on January 5 next. The right is reserved to reject or reduce any application and also to close the subscription books at any time without notice.

HARDWARE.

Condition of Trade.

THE PAST WEEK has been only moderately active in Hardware circles, the volume of business being diminished by the fact that the week was broken by a holiday and closed a month. The general features of trade remain as for the past few weeks, the merchants purchasing with a good deal of reserve and prices being without important change. Winter goods are moving freely under the stimulus of cold weather, and in this line there are indications of a very satisfactory business. There is still a good deal of complaint in regard to collections. The condition of business in the leading centers is reflected in the special reports which are given in the following columns.

St. Louis.

(By Telegraph.)

The Hardware trade continues in much the same condition as last noted. The local demand is heavy, but there is general complaint regarding the Southern trade, which for some reason fails to improve. The extreme cold weather in the North and Northwest has caused a heavy demand for winter goods from that locality, and prices are firm in consequence. The outlook is fair, and if collections would improve jobbers would be content. Barb Wire continues unchanged, although indications are regarded by many as pointing to a sharp advance in the near future.

Chicago.

(By Telegraph.)

The Shelf Hardware trade is fully as good as it has been, and in some respects is showing an improvement. The demand for Skates, Snow Shovels and other strictly winter goods is now very heavy, and stocks are badly broken. Staple goods are moving but slowly, however, and jobbers are endeavoring to convince their customers that a mistake will be made if too long a delay is permitted in stocking up. There is a general feeling that such goods will be higher after the new year sets in. The low rates now ruling, which hardly cover manufacturers' costs, cannot be expected to continue indefinitely. An important change has just occurred in the jobbing trade here, the old and well known house of A. F. Seeberger & Co., established for more than a quarter century, has sold out to Woodrough & Hanchett Company. The purchasers will close out the stock of Hardware immediately, intending to occupy the Seeberger store at 38 and 40 Lake street in the continuance of their business as a manufacturers' agency. C. H. Penny of Seeberger & Co. has become substantially interested in the W. & H. Co., of which he is now secretary. Very many of the old employees in the house and on the road will continue with the purchasers, who have greater capital, new lines added to their already popular list of accounts, and much improved facilities for handling and showing their goods. It is distinctly understood that they will conduct only a Hardware commission business as heretofore, and not enter the field as jobbers. Heavy Hardware jobbers report orders quite numerous but small, with considerable inquiry for wagon material and sleigh stock.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—What little change has taken place within the last two weeks in trade circles has been in the direction of improvement, attributable partly to weather influence and partly owing to the fact of moderate purchases only having been made during the four preceding weeks. It is but natural that trade in the coast cities should not feel the benefits of the large crop throughout the country so quickly as those cities more adjacent to the favored agricultural districts. Locally we would be more immediately benefited by a greater manufacturing activity.

The profit in almost all manufacturing and industrial industries has been cut to the lowest possible margin; indeed, without manufacturers keeping pace with the lines of improved machinery, even with the greatest care and management of expenditure, owing to the low margin of profit, the balance of profit and loss would most likely show on the wrong side of the ledger. The expansion of our purchasing power can all be made available in enabling the country to take care of the wonderful and abundant harvests, the effect of which, at no remote date, must cause the absorption of a very large amount of goods. It is, therefore, rather remarkable that, in nearly all lines of Hardware, prices are unremunerative. We are certain that the margin of profit to the jobber is at the lowest point ever known. We also know that it would not be possible for the same goods to reach the retail trade direct from the various manufacturers unless at an advanced price, to cover expense of placing same. Collectively, the goods pass through thoroughly organized channels at manufacturers' prices, but we regret to say in many instances neither the manufacturer nor the buyer appreciate the interest account in thus carrying tens of thousands of styles and kinds of goods, where a hundred styles and kinds were carried 15 years ago; neither is this all. The endless detail in familiarizing one's self, as well as the force around the establishment, with all these new goods that are on the market, in addition to the corresponding articles, styles and values of corresponding manufacturers, requires an endless amount of labor. Buyers for large jobbing houses fully appreciate this, especially after spending some days in investigating the various new and improved Door Locks of the various manufacturers, of corresponding value, together with the artistically constructed or the elaborately designed bronze, antique brass or oxidized-silver Knobs, Latches and Escutcheons, together with the various varieties, styles, patterns and colors; then realizing the fact that a Front Door and Vestibule Set combined and alone represents the entire value of Hardware which a few years ago was put in a house of moderate dimensions. It is the large jobbing houses that are expected to make all these comparisons for their trade.

We have been trying to unravel the intricate transformation of numbers, figures and prices given us by the American Curry Comb Company, in which all manufacturers of Curry Combs have been absorbed. To enable this company to keep up the various lines of the various manufacturers, duplicate patterns have been discarded and duplicate numbers have necessarily been changed, but how many explanatory letters will necessarily be written before the entire retail trade of the country are given to understand their orders have not been disregarded in sending out one number of Curry Comb when another number was ordered? The advance that has recently taken place in Curry Combs might well be looked upon as necessary, when an old firm like the Lawrence Curry Comb Company were compelled to succumb, owing to unremunerative prices. There is a tendency toward a slight advance in the price of Screws. Jobbers have latterly been distributing these without any profit to themselves.

There is also a tendency toward a stiffening in the price of Strap and T Hinges. These goods have also been distributed by the jobbers latterly at about the actual cost for the largest quantity purchases.

Holiday goods have gradually increased in demand with the approach of the holiday season. The country merchant has been buying very little Pocket Cutlery until latterly; indeed, in most cases, their shelves have shown an inexcusable meagerness. The consumers of these goods require something to tempt the eye to induce them to make purchases. We are pleased to learn the cheap trash of low-priced Pocket Cutlery is fast disappearing, and giving way to a trifle more expensive and much better article, and, for actual use, by far the cheapest investment.

Collections are only fair. Liquidation of farm mortgages has taken more money from the agricultural districts than was anticipated by the holders of the mortgages; money thus used would otherwise have flowed into the hands of the merchant. From the South complaints are made of the lateness of the cotton shipments. From the coal districts we have more favorable reports. The present output has reached dimensions never before

equalled. From the iron districts we learn of large orders recently placed for structural iron and steel rails, which are likely to have a beneficial effect upon remittances from that district.

Omaha.

LEE-CLARKE-ANDREESEN HARDWARE COMPANY.—The jobbing trade of this city continues in the same satisfactory condition as noted in our last report. Recent cold snaps have stimulated the movement of winter goods and have opened up trade in these lines earlier than usual in this part of the country. It is noticeable that corn continues to be king in this country, while cotton has long been reduced to the rank of a duke in the royal family of American products. In Nebraska alone the corn crop of 1891 is estimated at 160,000,000 bushels. At 25 cents per bushel this represents a value of $40,000,000. From these facts it is easy to be seen what an abundant crop and fair prices mean in connection with business.

Cleveland.

THE W. BINGHAM COMPANY.—The occasional touches of cold weather we have had in the past two weeks have stimulated trade somewhat, particularly in season goods. The large demand for Skates so early in the season is unprecedented. A good business is being done in Shelf Hardware, but there is no anticipation of wants. Plain and Barbed Wire is in moderate demand for immediate shipment, with prices regular. Nails are selling at $1.85 for Wire and $1.65 for Cut from stock, with but little call for the latter. Banking-house clearances so far this month are larger than for the same time in 1890, showing a generally increased business.

Louisville.

W. B. BELKNAP & Co.—Business continues very much as at last writing. There has been no recovery in the price of any kind of Iron or Iron product, but on the contrary the excessively large output of Pig being published far and wide has exerted a somewhat depressing effect. The pressure is beginning to tell as a matter of course, one furnace having lately gone by the board (a small one, however), and others threatening to stop unless the tide turns toward better prices. It is as severe a struggle as we have witnessed to demonstrate the most favorable point for manufacture. The opening of navigation in the Ohio River will materially ease up the railroads, which have been overcrowded with business and complaining of lack of cars.

It looks now as though buying would be light until after the first of the year at earliest; then we are promised great things if nothing happens to disturb calculations meantime. Calculations have been seriously disturbed a number of times of late, for just when we thought the turn had come another financial institution would let go somewhere, either North or South, at Boston or Wilmington, and our fond hopes of thoroughly restored confidence would be dashed to the ground. That the extremely heavy liquidation which has been going on for over a year has continued without a general panic is the most reassuring feature of the situation, and betrays the fact that values are on a solid basis and not to be overturned by ordinary reverses. The approximation to the limit of decline is a very interesting study. We all know there is a vanishing point at zero, but just how near prices are going to reach that in the course of time is the question. The consolidation of allied interests is not confined to commercial lines. We understand that about 60 insurance companies have gone out of business during the current year, and quite a number of banks are now in liquidation, having failed or given up business. Some of these days the country will take a fresh start and we shall all wonder that we could not see it coming.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—Since our last letter we have had the misfortune of a fire that substantially destroyed the stock in our main building. The fire occurred in the night and originated in the premises of the wholesale grocery house of Griggs, Cooper & Co., who occupied the block with us. The stock is almost a total loss. We were pretty fully insured, so that our loss on stock is not large, but the interruption to business is considerable. We resumed business the day of the fire, and have leased permanent buildings, into which we move December 1, which will give us increased facilities for our business. It is surprising to see the almost total destruction of the property. The condition being granted that a fire gets well under way in a large hardware stock, it is an assured fact that the destruction will be about complete. The moral of the occurence is to keep well insured, and we congratulate ourselves on being moderately covered. Regarding the general condition of trade in the Northwest, we should call it favorable. The cold weather has set in and shows every indication of being fixed. The country is covered with a light body of snow and, with this occuring as early in the season as is the case this year, we may reasonably expect continued cold weather, and this is a favorable condition for the trade. Collections have been somewhat slow, but they will now improve, as farmers can no longer plow or do much general farm work and will give their attention to moving their heavy crops to market. Railroads will be busy for several months carrying the grain to market. Trade in all lines promises to be good, and collections should certainly be very satisfactory. Prices in all lines of Hardware are being well maintained, and the year's business will, doubtless, close satisfactorily to jobbers generally.

New Orleans.

A. BALDWIN & Co., LIMITED.—Almost every branch of business in this center is affected by the low ruling price of cotton. At times there seems to be considerable life in business circles, and there is not that same uncertain feeling that existed recently. The demands for Hardware are about on a par with the past year, but there does not seem to be that usual activity attending sales at this season of the year. The uncertainty as to the price that the planters are to receive for their crops seems to cause the merchants in the country to hold back their orders, waiting for a brighter prospect. The situation in the sugar districts is much more encouraging, and orders are coming in quite liberally. The demand for staples has almost ceased, and large orders for Barb Wire or Nails are few and far between. Steel Nails are selling here at $1.85 basis, and a very small movement in Wire Nails at $2.25 basis. In summing up the situation the outlook is more encouraging than it has been for some weeks past.

Portland, Ore.

FOSTER & ROBERTSON.—But very little of interest has transpired since our last letter. The rains still continue and interfere materially with outdoor work, and the roads, if possible, are just a little worse than they were two weeks ago—a condition of affairs which positively prevents all intercourse between the country merchant and his customer. In view of the many drawbacks, trade is surprisingly good, and for the month of November will probably equal in volume the same month of last year. Collections still drag, and there is little or no prospect of any improvement until we are favored with better weather.

With the exception of a decline of ¼ cent per pound in the price of Barb Wire, an advance of ½ cent in the price of Manilla Rope, and a decline of ½ cent in the price of Duplex and Sisal Rope, there are no changes to report. Much confidence is felt in business circles for the coming year, and jobbers are shipping unusually large quantities of goods via the Horn, although rail shipments for immediate wants are decidedly light.

Baltimore.

CARLIN & FULTON.—Beyond the activity in business incidental to the approaching holiday season, there is little else to relieve the situation from being considered emphatically dull. At this season of the year trade is never very heavy, it being considered an "off" month, for the reason that many end the fiscal year with this month, and curtail stocks accordingly. In the South the continued low price of cotton depresses business very much, but in our more immediate neighborhood we suppose the demand for goods is all that we can at present expect. Prices of all staple goods remain low, needing the stimulus of an active trade to increase them. This, we believe, will eventually happen, but just how soon no one can safely predict.

Boston.

BIGELOW & DOWSE.—There has been a marked improvement in store sales, as well as in salesmen's orders, the past two weeks. Orders are well assorted, and retailers are busy. Freezing cold weather is having a beneficial effect. Good skating early in the season insures a good sale for Skates, and as stocks are reduced it is hoped prices will be firmer. The new fad

this season is a racing Skate, with runners from 16 to 18 inches long. It is claimed skaters have made a mile in less than two minutes on these new Skates. Prices on general Hardware show few changes. The outlook is favorable.

Notes on Prices.

Cut Nails.—During the past week only moderate transactions in Cut Nails are reported. While a good many orders in the aggregate have recently been placed, purchasers have not been disposed to avail themselves of the low prices very freely, many of them apparently lacking confidence that there will be an early recovery. It is, however, thought by many that purchases at the extreme prices now ruling are entirely safe, with a better prospect of an increase in the price than of a further decline. Quotations have not changed since our last report. They are on the basis of $1.45 to $1.50 at mill for carload lots of either Iron or Steel Nails. Many mills are holding pretty firmly at the higher of these figures, but on large and desirable orders $1.45 is obtainable. New York quotations are $1.55 to $1.60, on dock, small parcels from store being sold at $1.65 to $1.70.

Chicago, by Telegraph.—The demand for Steel Cut Nails is moderately active, keeping local makers well engaged. Very low prices have lately been quoted through the Northwest by Wheeling manufacturers, but evidently based on water rates, which will now cease with the close of lake navigation. The local price is still $1.65 on 30-cent average. Jobbers quote $1.75 from stock.

Wire Nails. — The condition of the Wire Nail market remains substantially as at our last report. Prices are still quoted on a basis of $1.70 to $1.75 for large lots at mill, the former figure, however, being given not very freely, and only in special cases where the position of the customer or the desirability of the order justifies it. The mills are evidently desirous of securing orders, but are not making especially active efforts, and are indisposed to give further concessions. The question as to the feasibility of making an organization among the manufacturers in this line is still receiving attention, and a meeting will be held to morrow (Thursday) to take action in regard to a proposition looking to the formation of a strong organization for this purpose. It is understood that some of the leading mills have acquiesced in the general features of the proposed plan, but at least one prominent manufacturer has signified his intention to hold aloof. While there still appear to be difficulties in the way, some progress has evidently been made in the matter. It remains to be seen what the outcome will be. Well-informed parties are in doubt as to whether it will be found feasible to consummate the proposed arrangement.

Chicago, by Telegraph.—Manufacturers' agents report comparatively few inquiries for Wire Nails; most large buyers seem to be well supplied for this year. Some difficulty is experienced in getting buyers to specify and double work is thus entailed on sales agents, who are now employed in getting buyers to conform to their contracts. Quotations from factory are maintained at about $1.90, Chicago. There is some weakness among jobbers, but regular quotations are $1.95 to $2, according to quantity.

Barb Wire.—The Barb Wire market is without special feature. The demand is sluggish. Prices are regularly maintained.

Chicago, by Telegraph. — Barb Wire manufacturers report a good demand for the season, but they have yet made no change in price. Jobbers' trade is rather light.

Strap and T Hinges.—During the past two weeks the large trade, availing themselves of the opportunity given by the manufacturers, have been purchasing very freely, and orders have been placed by many houses covering their requirements for a number of months to come. Some of the jobbers, it is understood, object to the policy of the manufacturers in making one price to the wholesale and retail trade, and it is thought not unlikely that in order to meet their views to a certain extent a change in this respect will be made before long, and that at the same time advanced prices to the general trade will be announced. For the present, however, the larger retailers are disposed to place their orders and avail themselves of current prices. The tone of the market is thus firm and strong, the manufacturers working together harmoniously, the volume of business being large, and there being some prospect of an advance.

Glass.—Reports are conflicting in regard to the demand for Glass. A Pittsburgh exchange states that Western window houses are producing in nearly every instance to the full capacities of their furnaces, and many have orders ahead. Quotations have been received by local jobbers of 85 per cent. discount for the first bracket and 85 and 5 per cent. discount for sizes above. This would indicate that some factories at least were not able to dispose of their output at regular prices, and were offering inducements to secure orders. An order was not placed at these figures. French Glass is bringing quoted prices in most cases, the exceptions being where concessions are made to secure large and desirable orders. Prices as quoted remain unchanged upon the following basis: American Window Glass, in carloads, 80 and 10 and 5 per cent. discount; less than car lots, 80 and 5 per cent. discount; French Window Glass, 75 and 10 per cent. discount; American Plate is held at a discout of 50, 10 and 5 per cent., and Imported Plate at a discount of 60 per cent.

Curry Combs.—The American Curry Comb Company are preparing a new catalogue descriptive of the line of goods which they are putting on the market. It is expected that it will be ready before long. It will, of course, present a very complete line of Combs, and the consolidation of the different manufacturers permits the throwing out of a good many numbers which have heretofore been made. It is understood that the company will adopt the policy of net prices, which will be named on application and not incorporated in catalogue or price-list. The very low prices which have been ruling on some of the cheaper goods necessitate a heavy advance in such patterns, and it is intimated that the new prices will be considerably higher than those which have recently been ruling.

Key Blanks.—The manufacturers of Cabinet Locks have adopted a revised and uniform list of Key Blanks. The fact that the lists of the different manufacturers of these goods have not been entirely uniform has occasioned some inconvenience. The revised list corrects inequalities. It is subject to the regular discount of 33⅓ per cent. and 2 per cent. for cash.

Belt Hooks.—We give below the prices of Jones' Patent Belt Hooks, manufactured by H. H. Jones, Lancaster, N. H. A description of this Belt Hook was given among our Hardware Novelties in our issue November 12. The list is subject to a discount of 70 per cent.:

	Per 1000.		Per 1000.
No. 14	$2.40	No. 6	$8.50
" 13	2.60	" 5	11.00
" 12	2.80	" 4	14.00
" 11	3.00	" 3	16.00
" 10	3.50	" 2	20.00
" 9	4.00	" 1	30.00
" 8	5.00	2½-inch	50.00
" 7	6.00	3-inch	60.00

Miscellaneous Tools.—The following discount sheet issued by William Johnson, Newark, N. J., applies to his list B, January, 1890. It will be of interest to our readers as indicating the wide range of goods which he is manufacturing and putting on the market, and the prices at which they are sold. In addition to the discounts named below there is a discount of 5 per cent. for cash within 30 days.

	Discount. Per cent.
Aligning Pliers	40
American Can Openers	50
Belt Awls	40
" Borers	40
Bench Stops	30
Blacksmiths' Tongs	55
Box Chisels	70
" Scrapers	60
Brick Chisels	50
" Drills	50
" Joiners	50
Bung Starts	add 60
Butcher Block Scrapers No. 371	25
" " " No. 449	25
Butter Spades	40
Button Hole Chisels	30
" " Cutters	30
Cabbage Corers	25
Cabinet Scrapers	25
Calipers, Wing	70
" Inside and Outside	70
" Double	70
" Navy and Fancy	70
" Register	50
" Center and Keyhole	50
" With Wing and Set Screw	50
Carpet Awls	60
" Stretchers Nos. 275 to 277	50
" " No. 278, Japanned	60
" Stretcher Handles	45
" Vises	45
Carpenters' Pincers	10
Carvers' Markers	40
Center Punches	50
Champagne Hooks	50
" Knives	45
Chisels, Cape	30
" Cold	25
" Round Nose	30
" Half Round Nose	30
" Diamond	30

Clam Knives.....45
Compasses.....70&5
Compass or Wing Dividers.....70&5
Countersinks.....50
Curling Irons No. 434.....50
" Tongs No. 435.....50
" " Langtry, No. 436 to 441...net.
Dowel Plates.....30
Eyelet Sets.....40
Fluting Scissors.....50
" Machine Heaters.....40
Gauges Nos. 000 to 30½.....50
" " 1 to 97.....45
" McCollough's Patent.....50
Garden Trowels, Forged, No. 309.....33⅓
" " No. 310.....60
Gas Pliers.....66⅔
German Cabinet Saws and Frames.....20
Glass Pliers.....25
Hair Pinching Irons No. 429.....55
" " " No. 430, 431.....55
" " " No. 432, 433.....50
Ham Stringers and Tryers.....50
Hammers, Adze Edge.....30
" Brad.....33⅓
" Riveting.....33⅓
" Saddlers' { Regular.....40 / With Claw or Side...40
" Tinners'.....50
" Trimmmers'.....40
" Trunk.....40
" Upholsterers' { Light.....45 / Heavy.....45 / Usual French, ⅝ face.....45 / Solid Steel French.30 / " " Rose-wood Handle..40
Hatchets, Shingling.....25
" Claw.....25
Hunters' Axes.....25
Hooks, Bag.....40
" Box.....60
" Cotton.....60
" Hay.....60
" Meat.....30
Ice Hatchets.....33⅓
" Mallets.....20
" " with pick.....20
" Picks.....20
Lager Beer Faucet Extensions.....add 60
Level Glasses.....55
Mill Picks.....20
Mincing Knives.....60
Miter Rods.....25
Nail Sets, Multi-Pointed.....40
" " Nos. 217 to 220.....50
" " Concave.....40
Oil Cloth Knives.....50
" " Vises.....45
Oyster Knives, N. Y. Pattern.....66⅔
" " all other patterns.....50
Paper Hangers' Rollers.....45
Pinking Irons Nos. 281, 282.....45
" " " 283 to 286.....40
Pinch Dogs.....45
Pitching Tools.....50
Peg Breaks.....33⅓
Plumbs and Levels.....70&7½
" " Patent Adjusting..70&7½
Pocket Levels.....70

Plumbers' Tools.

Bags.....40
Bending Pins.....20
Blow Pipes.....25
Bossing Sticks.....60
Brushes.....40
Calking Chisels.....25
Cape " 25
Cold " 25
Candle Holders.....40
" Sticks.....40
Chipping Knives.....55
Compass Saws.....30
Copper Bolts.....33⅓
Dressers.....60
Drift Plugs.....60
Drills, Flat.....40
" Pipe.....60
Files and Rasps.....55
Floor Chisels.....50
Gas Pliers.....66⅔
Grease or Rosin Cups.....20
Hammers.....33⅓
Kinking Irons.....25
Ladles, 2½ to 6 inches.....50
" Heavy, 6 to 10 inches.....33⅓
Looking Glasses.....40
Packing Chisels.....net
Pipe Drills.....60
" Tongs.....25
Plub Bobs.....40
Pot Hooks.....50
Round Irons.....50
Sand Plugs.....50
Saws.....50
Scratch Awls.....40
Shave Hooks.....55
" " Blades.....55
Side Edges.....50
Soil.....10
" Cups.....20
Solder Pots.....40
" Molds.....40
Tap Borers.....60
Torches...No. 518 No. 519 No. 520 No. 521
$10.00 $9.00 $4.50 $3.60
Turn Pins.....50
Wiping Cloths.....45
Wood Chisels.....40
" Gouges.....40

Conductors', Spring, Revolving, Saddlers' and other Punches.

Punches, Conductors' Nos. 253 and 254.....45
" Conductors', Nos. 257 to 262.....40
" Ticket, No 255.....40
" Large Round.....40
" Saddlers' or Belt.....70
" Spring, No. 247.....55
" Pocket Spring, No. 256.....55
" Revolving, Spring, 4 and 6 Tubes..60
" " " and Eyelet Set..40
" Center.....50
" Solid and Prick.....70
Putty Knives, Large, or Wall Scrapers.....50
Rail Wrenches.....30
Rimmer Bits.....40&10
Saw Pads.....33⅓
" Sets, Hammer, Aiken Pattern.....60
" " Lever.....45
" " Wheeler Patent.....60
Sardine Scissors.....50
" Knives, French.....45
" " Iron Handle.....45
Scratch Awls, No. 400.....45
" Machinists'.....25
Screw Drivers, No. 135.....65
" " No. 136, Ebonized Handles..60
" " No. 137.....60
" " No 138, Ebonized Handles..45
" " No. 139.....50
" " No. 140.....50
" " No. 141.....55
" " No. 142, Ebonized Handles..40
" " Handles, No. 146.....25
" " Undertakers'.....33⅓
" " Sewing Machine Nos. 148 and 149.....70
" " Sewing Machine Nos. 150 and 151.....60
" " Bits No. 154.....40
" " " Nos. 155 to 160.....50
Segar Knives.....45
" Box Openers.....45
Splicing Clamps.....50
" Tools.....50
Spokeshaves, best.....30
" second quality.....33⅓
Spokeshave Blades.....30
Steak Pounders and Cleavers.....20
Stone Cutters' Chisels.....45
" " Points.....45
Tack Claws No. 372.....40
" " Nos. 373 to 384.....60
Templets.....30
Tinners' Cutting Nippers.....30
" Grooving Tools.....40
" Hammers.....50
" Rivet Sets and Headers.....60
" Scratch Awls.....25
" Solid and Prick Punches.....70
" Wire Chisels.....33⅓
Tongs, Bent.....50
" Blacksmiths'.....55
" Crucible.....50
" Pipe.....25
" Spring.....50
Trowels, Brick, Nos. 281 to 293.....30
" Brick, No. 100 Extra, Nos. 294 to 296.....33⅓
Trowels, Pointing.....30
" Plastering.....30
" Corner.....30
" Cross Joint.....30
" Gauging.....33⅓
" Molders'.....25
" Handles.....20
Turning Saws and Frames.....40
Turning Saw Frames only.....40
Turning Saw Frame Handles.....40
Upholsterers' Regulators.....40
Wall Scrapers.....25
Washer Cutters.....50
Webbing Pliers.....50
Wing Dividers.....70&5

Trade Items.

D. R. SHERRY & CO. of Batavia, Ill., are manufacturing a cast-iron 13-pound Maul, which they offer to the trade as a very superior article. It is made of the best pig iron, and has a perfect eye to which a handle can easily be fitted. A specimen of this Maul is exhibited in the store of Horton, Gilmore, McWilliams & Co., Chicago. It shows rough usage, but has endured the punishment remarkably for cast iron. Both heads are deeply indented, the appearance of the metal there resembling wrought iron. With such treatment a Maul made of poor iron would certainly have been knocked to pieces.

EX-Governor of Iowa John H. Gear has been appointed receiver for the McCosh Iron and Steel Company of Burlington, Iowa. The court fixed his bond at $50,000. Operations are to be resumed by the works of the company.

LEWIS GIBBS, founder and inventor of the Gibbs Imperial Plows, who has for the past 25 years been managing superintendent of the Bucher & Gibbs Plow Company, Canton, Ohio, has disposed of his interest in this firm to J. R. Poyser & Son, lumber dealers, of the same city, having in view a change of location and climate.

THE TRADE will observe that in their advertisement, occupying page 117, the Covert Mfg. Company, West Troy, N. Y., illustrate their new patent Snap and refer to the advantages possessed by it. We are advised by the manufacturers that evidence of its excellence is found in the fact of a large and increasing demand which taxes their capacity.

SAMUEL A. HAINES, the well-known Hardware merchant of Chambers street, who has been seriously ill for the past six weeks, is now convalescent and attending to business. His many friends will be glad to learn that he is fully prepared for a large season's trade.

DILLE & MCGUIRE MFG. COMPANY, Richmond, Ind., for whom Samuel A. Haines, 90 Chambers street, New York, is agent, in their advertisement on another page call attention to the Lawn Mowers which they are putting on the market. These include the High Grass (high wheel) Diamond, in four sizes, the Diamond G, in five sizes, and the Western, in five sizes. It will thus be seen that the company are offering a complete line of these goods.

DAVID ROBERTSON of Foster & Robertson, Portland, Ore., who returned from a trip abroad the latter part of September, was taken down almost immediately upon his arrival with typhoid fever, and has been confined to his bed ever since. There has been a slight improvement in his condition within the past few days, but he is not yet out of danger.

THE TRADE will be pleased to observe the regular report from Farwell, Ozmun, Kirk & Co., an an indication that notwithstanding the destruction of their establishment, they are still in the field and in position to transact business regularly. They advise us that the stock in their main building is about a total loss, but the insurance nearly covers this, so that they have no serious loss from that source, although, of course, it is an interruption to business. The company resumed business the day following the fire and have taken the best care possible of their customers. The wholesalers in the Twin Cities and also in Chicago and St. Louis, kindly offered to do all in their power to aid them in taking care of their trade, and through their efforts, and also from the fact that large amounts of goods were in transit and arriving daily, the interruption to business was as light as could be expected. The company have secured new quarters which will enable them to handle their trade satisfactorily and they expect very soon to be running in good shape.

KILMER MFG. COMPANY, Newburg, N. Y., make an annoucement to the trade with reference to the suit brought against them by the Columbia Patent Company for alleged infringements of Barb Wire patents. They thus call attention to the fact that they have recently made large addditions to their plant for manufacturing Barb Wire, and are now in a position to supply both two and four point, rolling their own rods and manufacturing their

Wire direct from blooms, and giving personal supervision to details. They also refer to the fact that the Glidden patents have expired. In soliciting the patronage of the trade they allude to the quality of their Wire and also to the fact that they are uncontrolled by the Columbia Patent Company.

JOHN A. WALKER, vice president and treasurer of the Jos. Dixon Crucible Company, started Wednesday for Florida in the interests of the company, who own extensive cedar and mill property at Crystal River. Mr. Walker will be accompanied by two of his nieces and will extend the trip to the more beautiful and interesting parts of the State.

ADRIANCE, PLATT & Co, 165 Greenwich street, New York, announce that the sole agency at San Francisco for their Mowers, Reapers, Binders and repairs has been placed in the hands of Baker & Hamilton, who are so well and favorably known in the Agricultural Implement and Hardware business on the Pacific Coast.

The Business Outlook.

FROM OUR PHILADELPHIA representative we are in receipt of the following letter, giving an interview with Samuel Disston, in which reference is made to the condition of business and the outlook for trade. We take pleasure in laying it before our readers:

Having been advised of the return of Samuel Disston from an extended tour on the Pacific Coast, I took the opportunity of securing an interview, as besides having an unusually wide experience in business matters, Mr. Disston is a close observer, so that his opinions will doubtless be of interest to readers of *The Iron Age*. Mr. Disston had nearly completed opening his mail, which included correspondence from various European centers. One letter from Athens, besides matters personal to the firm, appeared to contain something of general interest, as will be noted from the following paragraph which I was permitted to copy. "On this occasion I wish to mention that I have recently been asked by our wholesale ironmongers for American tools, which have a high reputation here, and which could be sent to Greece with satisfactory results." After some general conversation, questions and answers were as follows:

"How did you find things on the Pacific Coast, Mr. Disston?"

"Not satisfactory by any means. Things are duller there than they have been for years, and I confess to a good deal of disappointment."

"I am surprised to hear that. It has been understood here that crops there were magnificent and that great prosperity might be expected to follow."

"The wheat crop is equal to all that has been claimed for it. It is simply immense and is selling at unusually high prices, but there are other important interests that are very much depressed."

"What are they, Mr. Disston?"

"The most important is the lumber trade, and they are suffering not only from overproduction in the home market, but very severely because of the South American troubles. Chili was an immense consumer, but for some time past that market has been virtually closed. Then things have been very much overdone at such places as Seattle and Tacoma, and they are now suffering from the inevitable reaction."

"This is not likely to be of any long duration, is it?"

"As regards South America, no, but as regards the cities named, it will require years to catch up. In other words, they are ten or a dozen years in advance of the times."

"Do I understand you to say that business is being resumed with South America?"

"Yes, orders are coming in again, and things will soon regain their normal condition; Chili is a great market, and will be a heavy buyer in the near future."

"Are there any other industries that are unfavorably affected?"

"Yes, I was surprised to find that in the country between Seattle and Tacoma, up to the Cascade Mountains, hops are an important industry, hundreds of farmers raise from 2 or 3 to 10 acres each, the value of which is sometimes several hundred dollars per acre. This year, owing to the ravages of insects, the crop is practically destroyed, the aggregate loss being so great as to seriously affect business in many districts."

"Then taking it all in all, you do not regard the prospect for business on the Pacific Coast as very favorable?"

"For the present I do not; ultimately they will come out all right, but it is best not to expect too much for some time to come."

"What city do you regard as the most prosperous?"

"Portland, Ore., by all means. They are doing a splendid business there, and are so located that they are bound to command a large trade at all times. Alaska, too, is looming up as likely to be of increasing value in the near future. Besides its fisheries they have a very fine quality of coal, and in this connection I may mention C. A. Hege & Co. of the Salem Iron Works, North Carolina, have presented to the Moravian Mission in Alaska a complete saw mill, Henry Disston & Sons contributing the saws and all the necessary fittings."

"Is this to be regarded as a missionary contribution, Mr. Disston?"

"In one sense it is; in another it is purely a matter of business. These Indians need houses, the missionaries will show them how to build them, and we are very glad to furnish tools for that purpose. Moreover, as the people become civilized they buy tools, hence we expect that some of these days the saws that we now contribute to the mission will be the means of fostering a legitimate business demand for our saws, and on a much larger scale."

"You do not seem to be very sanguine in regard to an immediate improvement in business, Mr. Disston. Won't these splendid crops help things, as everybody has been expecting?"

"The crops are all right, and the outcome will be all right, but not as quickly as many people expect."

"Why not?"

"Because people are paying their debts instead of buying goods. Those who have had mortgages on their property took the first opportunity of releasing them, instead of buying new goods. I have information from a company in Kansas with which I am connected that not less than $7,000,000 have already been paid off in that State alone."

"Then you do not suppose there will be an increased demand for goods until there is another crop?"

"Certainly there will be. A man who owns a property clear of incumbrance can always buy goods when he wants them. There is just this difference: The old incumbrances are being paid off, and to that extent the country is so much the richer; that same money will seek reinvestment after awhile, but in the interim the man that paid off his mortgage is in good credit, and will have no difficulty in buying anything that he needs, which he could not do when he was heavily mortgaged. Crops are all right, and the country is all right, and business will be all right, too; but at the moment it is dull and unsatisfactory, and it will be some time yet before things work around to the point at which we can all agree in saying that business is first-class."

Taking Inventory.

BY A. F. G.

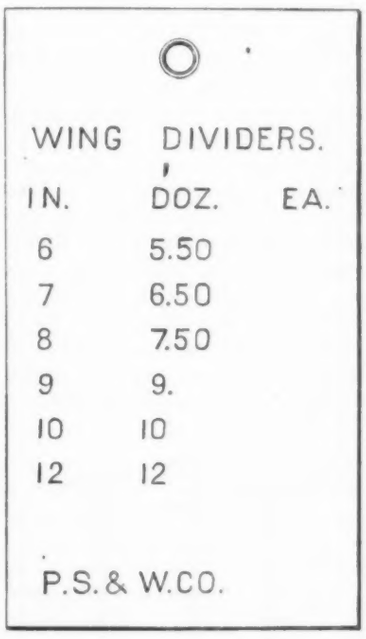
IT IS GETTING near the time when the interesting performance of stock taking must be gone through with by us Hardwaremen, and we might as well look the inevitable in the face and make the necessary preparations for the job. My method is this: About a month before I begin inventorying I ask the clerks if they know of anything in stock that has been hard to sell? After comparing notes, we put all the hard stock on a bargain table, and let no customer go out of the store without something that he can be induced to buy from this table, even if the article has to go for less than the bargain price marked on it. In this way we get clear, to a great extent, of invoicing hard stock. About a week before the trouble is to begin I instruct the boys to assemble all scattered goods, and put them in with the same kind of goods in stock, so that all goods of the same kind appear on the inventory in the same place. We begin to take stock at the front of the store, on the shelf goods, and write a tier of shelves at a time, beginning at the top and working down. This is done with pencil on ruled paper. After it is written, it is called back. We price these sheets and make extensions and footings, so that we may know the amount of the stock as soon as possible. The inventory is copied later in a book, with pen and ink, and the first figures verified. We take the goods on the top of the shelving by themselves, and those under the ledge by themselves, rather than take them with each tier of shelves. We leave Nails until the last thing, but everything else is taken in regular order. An account is kept of all the goods sold after they have been taken, also of all invoices of goods that are added to stock while the inventory is being taken. We make it a point not to let any article in the store remain unhandled, but disturb everything, dust it off and dust off the place where it has been. We watch out for any hard stock that has been forgotten and put it where it ought to sell; also for goods that we are in need of, a memorandum of which is made on the want book. Speed is attempted rather than haste in the work of stock taking, so that when we are through we are reasonably sure that nothing has been overlooked. This plan of stock taking I give, as it may be of assistance to some, and also that it may be compared with other methods in the columns of *The Iron Age*. I think it would be of interest to the trade generally to see the various methods used in summing up the results of the year's business, and, with the permission of the Editor, request that the different forms or balance sheets used by the readers for finding how much has been made or lost be sent for publication. It would be well to have these filled out with figures and explanations as to the use of the forms. I would suggest that such infor-

mation be sent promptly, to be of service this season. Last year's summing up will afford material from which to make up specimen sheets.

A Retailer's Suggestion.

A MEMBER of a progressive Ohio Hardware firm suggests that it would be of mutual advantage to the manufacturer and retailer to have price cards packed with goods, the accompanying illustration representing the style in which he thinks they would be most serviceable.

Our correspondent remarks that price cards are the best labor saver ever introduced in their store, but believes a merchant cannot do this work as satisfactorily as the maker of the goods could have it done. He argues that the manufacturers would confer a great favor on the merchant, at the same time advertise themselves. Another gentleman, who is familiar with the subject, fully indorses this idea, as will be seen from the following remarks:



Manufacturers' Price Card.

We usually unpack goods in the evening, there being less interruption at that time, but I am always tired, and it is a bad time to make new cards. What a relief it would be if a card was found in each box of Locks, Screw Drivers, Chisels, Hatchets, Saws, &c., so that the prices could be marked on the card, and the card attached by a string to the box or drawer in which the goods are kept.

This is a matter which is worthy the consideration of manufacturers, and we shall be glad to hear further on the subject.

Trade Topics.

Hardware Burglaries.—The following communication from a Hardwareman, some of whose former communications we have had the pleasure of laying before our readers, refers to the measures which he has found it expedient to adopt in order to insure the security of such goods, as Cutlery, which occupy but little room but represent considerable money:

Having read with much interest the different articles in recent numbers of *The Iron Age* regarding burglaries in Hardware stores, I have noticed that no mention whatever is made of Locks or other fastenings as factors of safety. One correspondent relies entirely on the noise of an electric bell, while another considers his stock safe in the absence of "nasty little Revolvers." There are, however, some Hardware houses with whom Revolvers and other arms are an important item of trade, and who can therefore not follow your correspondent's advice of banishing these. Electric bells must lose their value where there is no one but the intending burglar to hear them, since only the more good natured of these would be frightened by a little noise. Therefore it seems that parties having Revolvers and having no watchman must fall back on Locks for their security. The system followed by us consists of having top and bottom Bolts on all but one door, and of guarding this by a cylinder mortise Lock of the most approved pattern, reinforced by a heavy Hasp on outside of door, fastened by a secure Padlock. All but the main door are further protected by a bar of iron 1½ x ⅝ inches, fitting in staples in the casing and secured in center by a hasp and padlock. This latter lock was provided to prevent the possibility of opening doors from inside without a key. To prevent the accumulation of many different keys the padlocks were selected to interchange. All windows are provided with iron shutters on hinges, fastened on inside by bolts and padlock. This arrangement seems a trifle cumbersome and old-fashioned as compared with the electric apparatus, but it has afforded security—the desired end—and we consider it safe against anything but the breaking of the doors, which are heavy and covered with iron on the inside. We would be pleased, however, to hear from some of your readers on this subject as applied where the police force is small and unreliable.

Taking Inventory.—We commend to our readers the article in another column by "A. F. G.," in which it will be observed our contributor gives some practical suggestions and a description of his own method. As a subject of especial interest at this time we should be glad to hear from Hardwaremen in regard to methods which they find desirable. We would especially second our correspondent's suggestion that our readers advise us in regard to the details of the different methods pursued for obtaining a correct result as to the profits of the year's business, with any information in regard to the principles which should be observed as to the prices at which goods are inventoried, or other points connected with the stock taking.

Price-Lists, Circulars, &c.

HARDSOCG MFG. COMPANY, Ottumwa, Iowa: Drilling Machines and Miners' Tools. The former are funished in a number of patterns, adapted for drilling all kinds of coal, fire clay or rock salt. For convenience in ordering cuts are shown of all Machines, Repairs and Miners' Tools, each being numbered or lettered. The company have added largely to their former facilities by additional buildings, equipped with new and late improved machinery. They handle nothing but goods of their own manufacture, and their Tools, it is stated, are all made and hand finished by skilled Tool makers and of the best materials that can be produced.

SHELTON COMPANY, Birmingham, Conn.: Bolts, Tacks, Small Nails, 3d Fine Nails, Washers, &c. Their catalogue, just issued, is a book of about 40 pages, well arranged, and will be found a convenient compilation of lists of the important line of goods to which it relates. Illustrations are given of Bolts, Lag Screws, Bed Screws, &c. In the arrangement of the book sufficient room has been given to the lists, thus avoiding confusion and rendering them intelligible. For convenience of customers a series of class numbers has been adopted, and as rapidly as possible these numbers will be introduced on all labels, and will be used in invoicing goods. On all labels of Tacks and of Bolts, wherever practicable, an exact cut of the article contained in the package will appear. A discount sheet accompanies the catalogue.

BISSELL CARPET SWEEPER COMPANY, Grand Rapids, Mich.: Carpet Sweepers. An artistic illustrated pamphlet, showing the Bissell's Grand Rapids, Bissell's Standard, Bissell's Grand, Improved Crown Jewel, Nos. 1, 2 and 3, Original Bissell and the Magic. Descriptions are given of these machines and reference to the materials used in their construction.

KRAEUTER & CO., Newark, N. J.: Fine Steel Tools. These include Compasses, Dividers, Calipers, Gas Pliers, Pinking Irons, Ticket Punches, Revolving Punches, Washer Cutters, &c. These goods are illustrated in a 23-page catalogue, together with prices.

MICHIGAN WIRE AND IRON WORKS, Detroit, Mich.: Wire Cloth of all kinds, Iron Jail Cells, Iron Beds, &c. A special Iron Fence supplement of 40 pages illustrates, with prices, Fences of various designs, together with Cemetery Vault Gates, Wrought-Iron Jail Cells and Cages, Wrought-Iron Bedsteads, &c. Special attention is directed to their Adjustable Line Post.

BLOUNT MFG. COMPANY, Boston, Mass.: Blount Door Check and Spring. This is referred to as closing doors without slamming, and as allowing the door to be opened with slight resistance. It is stated that it is noiseless in working, and positive in action; the checking power can be controlled so as to close the door at any speed desired.

THE WEBSTER & PERKS TOOL COMPANY, Springfield, Ohio.: Ideal Automatic Safety Elevator Gate. It is described as always being open when the platform is at the floor, and as always closed when the platform is not there, and as being neat in appearance, being made of iron and steel.

NORTHERN REFRIGERATOR COMPANY, Grand Rapids, Mich.: A metal end panel hanger of artistic design, being sent by the Northern Refrigerator Company, Grand Rapids, Mich. On the reverse side of the card are illustrations of their Refrigerators, among which handsome patterns are shown.

FRANKLIN BRASS COMPANY, Buchanan, Va.; W. F. Brainard, agent, 111 Chambers street, New York. Brass Hardware. Their catalogue shows a large line of wrought brass goods, including Box Hinges, Flap Hinges, Fancy Hinges, Strap Hinges, Refrigerator and Fancy Hinges, Shutter Flaps and Butts, Hinge Hasps, Pulls, Screen Lifts, Escutcheons, Mirror Plates, Box Corners, Grummets, Ferrules, Diamond Point Box Ornaments, Washers, &c. Fancy Hinges, Hinge Hasps, &c., are shown in a variety of designs, the patterns being largely new; while it is a line of goods for which there is an increasing demand. Attention is directed to the attractive prices which are named, as being somewhat lower than those usually quoted on similar lines. It is the endeavor of this company to put upon the market a high grade of special goods, and they propose increasing their line more extensively the coming year than they have in the year past. They now enjoy larger factory facilities and state that they are in a position to make any special goods in wrought or cast brass.

Arrangement of Stores.

WITH A FIRM BELIEF that a Hardware store could be made to look quite as attractive as a jewelry store, W. A. Foster, 2526 Kensington avenue, Philadelphia, experimented to that end with considerable success and satisfaction to himself. Having long been a reader of *The Iron Age* and having derived many useful ideas from its pages, he gives his

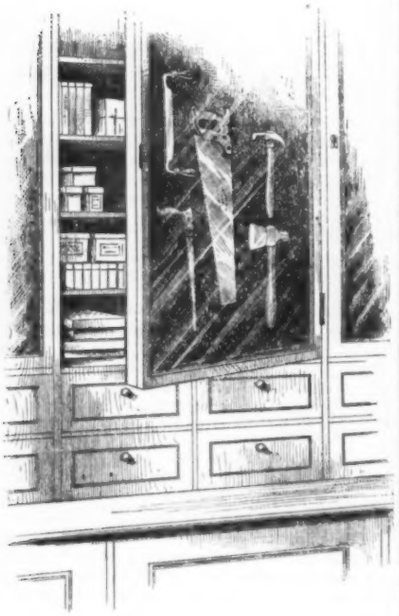
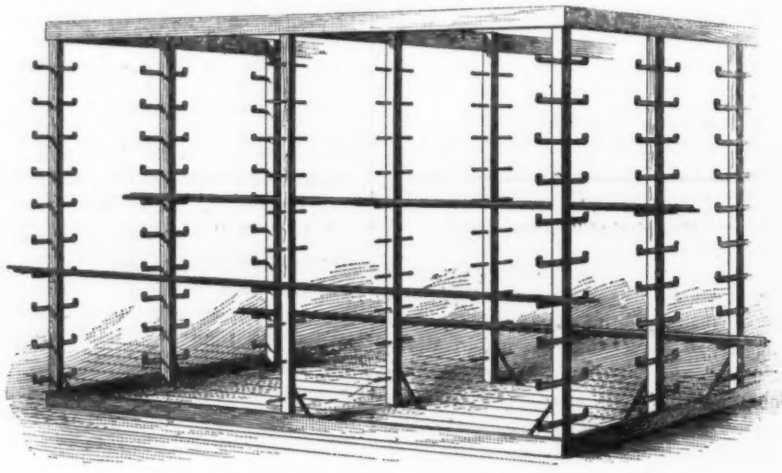


Fig. 696.—Shallow Show Cases in Front of Shelving.

plan for the benefit of those who care to use it. On one side of his store are various packages and boxes of all shapes, sizes and colors, in the naturally soiled and more or less worn condition resulting from much handling, which usually present an appearance that has caused misery to many neatly disposed dealers when they looked at their shelves. In Mr. Foster's store this is all hidden and the place made quite beautiful by encroaching on his store space a few inches. In front of the goods kept in original packages he has hung shallow showcases on hinges, as shown in Fig. 696. The cases are about 3 inches deep, the back and sides being lined with dark cloth, against which are displayed Spoons, Cutlery, Tools and the endless variety of bright and attractive goods which go to make up a Hardware stock. The front of each showcase is a glass door, hung on separate hinges from those upon which the back is hung. The glass door may be opened to allow a purchaser to inspect the samples more closely. When the goods have been decided upon the glass door is closed and the showcase is swung away from the shelves, when the articles required can be taken from the original packages. Though not so shown in the cut, the side of the showcase opposite the hinges should be beveled from front to back, so that the case will swing clear without striking. When the doors reach from the ceiling down to a desirable point above the counter ledge, drawers are used to fill the intervening space. An array of Hardware goods in a series of such cases imparts to a store an appearance of elegance, and is not very expensive. The plan can be adopted in many stores with very little trouble, and it pays to impress customers with the idea that the goods are of high grade.

Bar-Iron Rack.

WE ARE indebted to E. C. Schwingel, Dansville, N. Y., for the following sketch and description of a convenient Bar-Iron rack, the original of which was made by him some time since. The posts are $3\frac{1}{2}$ x $3\frac{1}{2}$ inches, of which there may be 12, 16 or more, according to the requirements of the stock of Iron carried. The posts are held in place by 1 x 4 inch strips, which makes the rack firm enough to be moved if desired. The posts are all braced on one side, which adds to the rigidity of the structure. If the posts and strips are fastened together with screws the rack can readily be taken apart and moved from one building to another. On the end posts pieces of $\frac{3}{4}$ x $\frac{1}{4}$ iron, bent at the ends, are gained in flush with the post and fastened with wood screws or wire spikes, and are bent up sufficiently to hold as many Bars as desired. The irons on the center posts are made of $\frac{1}{4}$ or $\frac{5}{8}$ inch



Bar-Iron Rack.

round iron, driven into holes bored through the posts. These center irons serve only to support the middle of the Bars, or they may be bent on the ends to form hooks to hold the shorter pieces. It is estimated that the bent irons at the ends being let into the posts will carry $\frac{1}{2}$ to $\frac{1}{3}$ ton each. The posts being 10 feet apart leaves about 2 feet of the Bar to project over at each end of the rack, while the iron supports in the center hold the Bar in as straight a position as if laid on the floor. The distance that the posts should be apart is regulated according to the length of the iron arms, and should allow sufficient space for a man to walk between the posts with a Bar of Iron and lay it in its proper place. The size of the Iron is marked on the post where the arm crosses it so it can be plainly seen. This form of rack will be found very convenient where there is sufficient floor space to set the posts the proper distance apart. The arms may be placed close together, enabling a large assortment of Iron on quite a small rack. It should be built only high enough to make the highest arms easily accessible. The top can be covered with cheap boards and used for storing light goods out of season. It will hold a large quantity of such goods, the irons serving as a ladder for reaching the top. The rack is designed for use in retail stores, and may be made of either hard or soft wood.

English Oddities.

BY A. F. G.

WE WERE INTERESTED in looking over a foreign paper devoted to the Hardware and iron interests to notice the peculiarities of the country and people which it represents. This is, of course, from an American point of view, the peculiarities being brought out in the reading matter and advertisements. As compared with American customs the following instances strike us as of interest: A party who was engaged in the metal and other kinds of business failed, and in the notice is referred to as a bankrupt. He was obliged to attend the county court for public examination and required to make a statement in court of his liabilities and assets. In reply to questions he described in detail some of his financial ventures, stating the cause that led to his failure. It is evident the English bankrupt laws are different from ours. Under review of the Hardware market "Dram Flasks and Breechloading Implements" are given together, and are manufactured by the same firm. It is stated that of late the larger sized bottles have been much in vogue, chiefly for export. Crocodile and lizard skins have still the chief run in leather for coverings. Shot Guns are referred to as "Birding Guns," and "Shooting Tackle" is the term applied to sporting goods. Hardware is known as Ironmongry, and stores of all descriptions

are spoken of as shops. A review is given of the state of trade in "Cabinet Brass Foundry and Locks," which would be spoken of by us as Cabinet Hardware. In mentioning the names of subscribers to stock in various companies it is customary to give the occupation of each, as gentleman, engineer, shorthand writer, wool merchant, farmer, &c.; the occupation of gentleman, however, predominating. A female subscriber is designated as a "spinster." We notice a number of American patented articles are advertised as being for sale by American merchants and factors. The principals in manufacturing or mining enterprises are masters, which corresponds to our proprietors or makers. Peculiarities in the manner of representing the denominations of American money are noticeable in market reports received by cable, as: "Tin—Quiet at 20 dol. 50c. spot;" or, "Copper—market dull at 16 dol.;" giving price in this form instead of using the dollar mark, as $20.50 or $16. "Tenders wanted" conveys the information that bids are solicited on work of either a public or private character. An advertisement of "Railroad and Mineral Wagons" is accompanied by illustration of a coal car, the term wagon being used for car. Advertising rates appear as "Advertising Tender, 4s. 6d. for 5 lines," &c. A business for sale is advertised thus: "Business for disposal. Furnishing and working Ironmongry; excellent returns; part purchase money can remain." The same advertisement in an American paper would probably read something like this: "Business for sale. Hardware store doing a good business, with satisfactory profits; part cash, balance on time." "Employers wanting assistants," heads the column of help wanted. An advertisement reads: "Smart assistant wanted at once; General Furnishings; wages 25s.; 8 a.m. to 9.30 p.m.; closes at 5 Thursdays." A person desiring a position inserts an advertisement as follows: "Assistant, Bookkeeper or Traveler, with view to partnership in about 12 months or less, by Ironmonger's Son." Professional stocktaking appears to be a regular calling from this notice: "Stocktaking; experienced hand; stocks written in detail, priced out and sheets left for future reference." Examples might be given almost without end, but those which we have noticed are sufficient. An Englishman reading an American paper would probably be equally struck with our peculiarities. We imagine that a salesman with however much experience in American Hardware would cut a sorry figure in selling Ironmongry over an English counter.

It Is Reported—

That M. P. Mayer, Hardware and Stove dealer, Tacoma, Wash., was damaged by fire on the 19th ult. The building was nearly destroyed, while the stock sustained injury to the extent of $3000. About $9000 or $10,000 worth of stock was stored in the establishment, the insurance on which is $4000.

S. J. Smith has retired from the Hardware firm of Smith & Rose, Pierre, S. D., owing to impaired health. Mr. Rose will conduct the business alone. Mr. Smith has not yet decided what he will do, but is thinking of engaging in the stock business and remaining in Pierre.

That Montague & Durish, Emery, S D., have sold their Hardware store building and stock to Mr. Heckenlaible.

That N. Peterson has opened up a new stock of Hardware at Loda, Ill.

That the Van Vamp Hardware Company, Indianapolis, Ind., are intending to erect a storehouse, to cost $14,000.

That the new stone building of the Post Hardware Company Trinidad, Cal., will be a three-story structure, and will extend back from Main street to First street.

That J. M. Bowier has commenced the Hardware business at Dadeville, Ala.

That D. How & Co., Hardware dealers, Melrose, Minn., have disposed of their business to Joseph Kraker.

That a new Hardware firm has commenced business at Fargo, N. D., under the style of N. F. Anderson & Co.

That James McMurchy has sold his interest in the business of McMurchy & Crary, Webster City, Iowa, to Chas. Crary, and intends to retire.

That S. N. Whicher, dealer in Hardware, Mt. Vernon, Ill., will remove his business to new and larger quarters.

That Campbell & Carlisle, Hardwaremen, Cambridge, Ohio, were burned out on the 21st ult.

That the M. V. Williams Company, dealers in Hardware, &c., Logansport, Ind., have sold out to A. J. Underhill & Son of Pentwater, Mich. F. A. Reger, manager of the M. V. Williams Company, will remain with the new firm until the first of the year.

That Howard Townsend is to open a Hardware store at North Lewisburg, Ohio.

That Stadt Bros., have succeeded the firm of L. M. Hare & Bro., Glasco, Kan., dealers in Hardware, Implements, &c.

That Fred. Haberman will purchase the Hardware stock of N. H. Gordon & Co., Hardware merchants, Marion, Ohio, January 1.

That J. W. Savage has purchased the interest of his brother in the Hardware business at Berkeley, Cal., and will hereafter conduct the business alone.

That J. W. Crancer & Co., wholesale Hardware dealers, Leavenworth, Kan., have for several years been systematically robbed by George Faerber, a trusted employee. It is supposed that about $7000 worth of goods have been stolen.

That O. B. Donaldson has purchased the Implement business of J. H. McGehu, Athens, Ark., and will continue it at the old stand.

That J. E. Nelson has opened a Hardware store at Jonesboro, Ind.

That A. Chappel, who was burned out some months since at East Meredith, N. Y., is making arrangements to open another Hardware store at that point shortly.

That A. M. Drake, Hardware merchant, Carthage, Maine, was robbed on the 15th ult. of $500 worth of goods. This makes the fourth time that his store has been burglarized in twelve months.

That Lehman & Mates, Hardware dealers, will soon open a new Hardware store at Redlands, Cal.

That Decker's Hardware store at Edgerton, Mo , was burned out on the 18th ult.

That Crouse & Leonard have purchased the Stove, Hardware, Implement and Harness business of E. Magrath, Williamsburg, Kan., and will enlarge and continue the business at the old stand.

That there is a good opening for a wholesale Hardware establishment at Velasco, Texas.

That Farnsworth & Co., Middlebury, Vt., were burned out on the 21st ult.

That Andrew Weir of the Hardware firm of Lambert & Weir, Bay City, Mich., has sold his share in the business to George Staudacher and Edward McGuinness. Mr. Staudacher was formerly connected with the McDonnell Hardware Company of Bay City.

That J. S. Blackstone, dealer in Hardware, Gladstone, Mich., has sold his business to J. A. Bradley & Co., who will continue it as heretofore.

That Stockton & Thompson will open a Hardware store at Clinton, N. J.

That Charles A. Filtsch is erecting a large store room, 25 x 70 feet, on the corner of Manvel and Fourth streets, Guthrie, Oklahoma. When finished Mr. Filtsch will put in a large stock of Hardware.

That Abram Hartley's Gun Store at Salineville, Ohio, has again been burglarized and a large quantity of Revolvers and Cartridges stolen.

That O. R. Smith is making preparations to open a Hardware store at Fremont, Ohio.

That $200 worth of Guns and Revolvers, together with some cash, were stolen from Nichols & Fuson's Hardware store at Bellefontaine, Ohio, a few days ago.

That the store of Payne & Canan, dealers in Hardware, Logan, Ohio, was robbed on the 15th inst. Shot Guns, Cartridges and Cartridge Belts comprised the stolen booty, which was, however, subsequently recovered.

That Allen & Lay is the name of a new Hardware firm at Gainesville, Texas.

That C. F. Paige & Co., dealers in Hardware, Athol, Mass., are materially beautifying their establishment by the introduction of approved methods of handling goods, &c.

That there is an opening for a Hardware store at Centerville, Wash.

That Mr Boyles is putting up a building in South Kokomo, Ind., which on completion he will occupy as a Hardware store.

That Jacob Carll, Jonesboro, Ind., has sold his Hardware stock to A. G. Nelson of Upland, Ind.

That the Hardware business of G. W. Peck & Co. at Cohocton, N. Y., has increased so much during the past year that additional accomodation has been secured.

That James Hicks has purchased the Hardware business of William Trelour, Linden, Wis., and will continue it as formerly.

That S. S. Plank has embarked in the Implement business at West Liberty, Ohio.

That Thomas & Dougherty will open a new Hardware store at Creston, Iowa, about January 4.

That Pullman & Heltinger's Hardware store at Silver City, Iowa, was destroyed by fire on the 13th inst. with a loss of $20,000.

That Williams & Co. have recently commenced the Hardware business at Marshfield, Wis.

That Frederick Taylor has sold out his Hardware business at Lowell, Mass., to a new firm under the style of the Thompson Hardware Company. The company is composed of Samuel H Thompson, formerly clerk with H. B. Shattuck, and E. J. Neale, of Southington, Conn. Mr. Thompson is well known in Lowell, and is referred to as an enterprising and successful young man. E. J. Neale is connected with the Peck, Stow & Wilcox Company of Southington, the Southington National Bank and the Southington Cutlery Company, and is referred to as a man of marked business ability. The store which has thus changed hands has been in existence since 1845.

Exports.

PER BARK J. H. MARSTERS, NOVEMBER 17, 1891, FOR DUNEDIN, NEW ZEALAND.

By Hartley & Graham.—1 case Metallic Cartridges, &c., 2 cases Empty Cartridge Shells, 10 cases Cartridges, 1 case Fire Arms.
By W. H. Crossman & Bro.—19 packages Lamp Goods, 4 cases Wringers, 1 case Sad Irons.
By Atlas Tack Corporation.—12 cases Nails.
By Strong & Trowbridge.—100 reels Barb Wire.
By W. K. Freeman.—1 case Store Trucks.
By R. W. Cameron & Co.—3 boxes Scales, 3 cases Pumps, 1 bale Rubber Packing, 5 cases Hardware, 1 case Stoves, 1 case Clamps.
By H. W. Peabody & Co.—1 case and 18 packages Hardware, 5 cases Cartridges, 2 cases Cartridge Shells, 1 case Fire Arms, 2 dozen Wringers, 12 packages Lampware, 1 case Bolts, 9 cases Edge Tools, 1 case Nails, 1 case Rifles, 15 cases Edge Tools, 24 packages Hardware, 1 box Nails, 3 cases Pumps, 6 cases Wringers, 1 case Traps, 38 cases Nails, 4 cases Hardware, 4 cases Wringers, 1 case Mangles, 5 cases Wringers, 1 case Hardware, 2 cases Planes, 2 cases Cradles, 4 cases Planes, 1 case Tinware.

FOR LYTTLETON.

By Hoadley & Co.—4 packages Hardware, 1 package Saws, 2 packages Pumps.
By Arkell & Douglas.—18 cases Axes, 12 packages Lampware, 4 cases Hardware, 1 case Stamped Ware, 4 cases Sad Irons, 1 hogshead Pumps, 12 cases Wringers.
By R. W. Forbes & Son.—4 boxes Hardware, 3 cases Hardware.
By R. W. Cameron & Co.—2 hogsheads Pumps, 1 case Braces, 1 package Drills, 8 packages Axes, 1 case Hammers.
By H. W. Peabody & Co.—4 cases Scales, 26 packages Hardware, 2 cases Pumps, 12 cases Horse Nails, 6 cases Wringers, 1 case Traps, 3 hogsheads Pumps, 15 cases Nails, 5 packages Lampware, 1 case Hardware, 3 cases Edge Tools, 10 cases Horse Nails, 4 cases Edge Tools, 9 racks Churns, 1 case Hardware, 3 cases Granite Ware, 3 cases Hardware.

FOR CHRIST CHURCH.

By R. W. Cameron & Co.—3 cases Nails, 1 cask Pumps, 1 box Drills, 6 cases Scales, 1 box Sweepers, 1 box Wire Goods, 3 cases Whetstones, 3 cases Wringers, 1 case Wrenches, 6 packages Lamp Goods, 2 cases Saws, 3 cases Hardware, 2 cases Rat Traps, 4 crates Stones.
By R. W. Forbes & Co.—9 cases Nails.
By Edward Miller & Co.—26 packages Lamp Goods, 24 packages Lamp Goods.

PER BARK HANOFER, NOVEMBER 21, 1891, FOR ADELAIDE, AUSTRALIA.

By Henry W. Peabody & Co—16 cases Hardware, 1 case Lead Pencils, 47 packages Barrows, 2 cases Wire Cloth.
By Edward Miller & Co.—2 boxes Lamp Goods.
By Winchester Repeating Arms Company.—40 Guns, 25,000 Cartridges.
By Reed & Barton.—6 packages Silver Ware.
By R. W. Forbes & Son.—4 packages Hardware, 4 cases Wringers.
By W. H. Crossman & Bro.—12 cases Iron Nails, 1 case Hardware.
By Winchester Repeating Arms Company.—15 Guns.
By Meriden Britannia Company.—2 packages Silver Ware.
By W. & B. Douglas.—19 packages Pumps.
By Tower & Lyon.—1 case Gun Implements.
By Sargent & Co.—5 barrels Bells and Cow Ties, 7 cases Hardware.
By Russell & Erwin Mfg. Company.—19 packages Hardware.
By Henry Disston & Sons—9 cases Hardware.
By Hartley & Graham.—5 cases Empty Shells, 1 case Empty Shells, 10,000 Primers, 1 case Hardware, &c., 34,000 Cartridges, 100,000 Primers.
By Edward Miller & Co.—32 packages Lamp Goods.
By Rogers, Smith & Co.—4 casks Silver Ware.
By S. Hoffnung & Co.—1 case Tools, 2 crates Traps, 2 boxes Lamp Goods.
By Australasian-American Shipping Company.—4 cases Forges, 296 cases Axes and Hatchets, 4 cases Rakes and Handles.
By McLean Bros. & Rigg.—1 barrel Braces, 1 case Air Guns, 3 crates Filters, 1 case Tacks, 1 case Augers, 1 case Chain Wrenches, 1 case Saws, 1 case Planes, 1 case Hammers, 8 packages Lamp Ware, 2 cases Gate Latches, 12 cases Rakes, 10 cases Drills and Saws, 3 cases Miter Boxes, 4 cases Coat and Hat Hooks, 3 cases Mattocks, 1 case Wire Cloth, 3 cases Saws, 2 cases Scales.
By Arkell & Douglas.—23 cases Agate Ware, 2 cases Fire Arms, 1 case Cartridges, 5 cases Sandpaper, 7 cases Rivets, 3 cases Oil Stoves, 12 cases Hay Knives, 3 cases Air Guns, 2 cases Oil Stone, 1 case Carpet Sweepers, 1 case Ladders, 1 case Traps, 610 dozen Mincers, 70 cases Grindstone Fixtures, 2 cases Tills, 1 case Rakes, 63 cases Wringers, 1 cask Pumps, 16 cases Nail, 36 cases Tools, 5 cases Lamp Ware, 9 cases Axes, 103 cases Hardware.

PER BARK AUBURNDALE, NOVEMBER 21, 1891, FOR CAPE TOWN, SOUTH AFRICA.

By N. E. Berliner.—100 reels Barb Wire, 6 cases Axes.
By H. W. Peabody & Co.—1 case Ladders, 4 cases Plows.
By W. B. Fox & Bro.—8 cases Agricultural Implements, 12 packages Hardware, 2 cases Meat Cutters.
By Coombs, Crosby & Eddy.—1 case Steel Saws, 4 cases Meat Choppers, 2 cases Axe and Pick Handles, 1 case Hardware, 2 packages Tools, 3 crates Churns, 2 cases Bench Screws, 1 case Pumps, 1 case Hardware, 1 case Tools, 1 case Grindstones, 1 case Hardware, 2 cases Planes.
By W. H. Crossman & Bro.—45 packages Agricultural Implements.
By Strong & Trowbridge.—6 cases Wheelbarrows, 1 case Rat Traps, 1 case Step Ladders, 19 dozen Meat Choppers, 108 Churns, 12 dozen Hardware.
By W. H. Crossman & Bro.—16 cases Hardware.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

No developments have taken place in any branch of the Paint and allied trades that prompt any departure from the line of policy that has been followed by buyers and sellers for several weeks. The outlet for house painters' goods gradually diminishes as the winter season advances, but specialties for car painting, carriage painting, &c., are moving off in quite the usual volume, and the base materials employed in the manufacture of the same are also faring well. Holiday specialties, such as artists' materials, continue to be taken with some freedom. Upon the whole, the distribution seems to keep right up to the early December average, and values, with few exceptions, are quite steady.

White Lead.—Not the slightest change is visible in the market for this pigment. The consumption at present is light and neither jobbers nor retailers are inclined to buy except as imperative wants may dictate in the absence of incentive for doing otherwise. As to what changes in prices, if any, may be made by corroders at the close of the year, nothing is foreshadowed at headquarters or by the individual concerns. The only information imparted is that none will be made to go into effect this month. Manufacturers of Mixed Paints quote the same prices that have ruled for some time past. Jobbers follow their former line of policy and respect official quotations in the breach rather than in the observance.

Zincs.—American manufacturers are receiving only a fair amount of new orders for Oxide at the moment, but the majority are well employed on old orders, and the surplus accumulation thus far is unusually light, despite the fact that several establishments are making a heavy output. The manufacturers' agreement as to prices remains intact, and the market preserves an even, steady tone. Importations of foreign Oxide are running about as usual at this season, and former prices rule on the new business that passes.

Colors.—Dry Colors, in bulk, for grinders' use, meet with somewhat irregular sale, but the movement is of fair average volume, and chiefly at old prices. The varieties prepared for painters' use are rather slow at present, but fairly hold their own in value. Oil Colors are in about the same position, but there is rather more steadiness to prices, owing to a growing belief that the cost of Oil is more likely to advance than recede in the immediate future.

Miscellaneous.—Importers' prices for Block Chalk have undergone no change, and the movement at present is of limited proportions, since consumers have caught up with orders for their products. Whiting and Paris White are quoted as heretofore, but the demand for both commodities is at present slow. Putty is rather dull and prices are still irregular, but show no radical change the past week.

Oils and Turpentine.

A few changes of minor importance in values covers about all that there is to note in the way of variation for the past week. Business has been of the same general character as during the preceding fortnight, and evidence is wanting of any new developments from which either buyers or sellers can claim any decided advantage. There is a disposition in some quarters to take a more hopeful view of the future of the Cotton Oil market and a tendency in the same direction regarding Linseed Oil is also noticeable. Otherwise interest does not extend a great deal beyond caring for present wants, and, as usual toward the close of the year, buyers are partial to the hand to mouth policy.

Linseed Oil.—The condition of the market for raw material acts as a restraint upon free offering of Oil at the moment, and the fact that it would be almost impossible to place large lots without sacrificing the goods also tends to keep competition temperate. There have been faint rumors of negotiations between the conflicting interests for the purpose of maintaining prices at a profitable level being renewed, but no tangible information on that point comes to the surface. Local crushers manifest a more hopeful feeling, however, and some who weigh their words have ventured the opinion that prices are unlikly to go any lower. This is looked upon as an indication that if an agreement has not been entered into by a majority of the crushers, practical control of the supply of seed has been gained.

Cotton-Seed Oils.—The market for crude product has remained very firm at the higher prices established last week. Prime quality refined has advanced about 1¢ and the "off" are fully as much better on actual sale. No large transactions have taken place, but between home trade and export outlet nearly the entire arrivals have been absorbed, leaving spot supplies unusually light for this season of the year. Advices from the South are somewhat conflicting and indicate that the two large producers and their smaller competitors are engaged in the annual struggle. A block of 1500 barrels crude has been sold for export at a special price, and outside of that about 900 barrels at 25¢ for prime and 26¢ for choice. About 2000 barrels prime Summer Yellow went at 29¢ @ 31¢, and 2750 barrels "off" grade at 27½¢ @ 29¢, as to condition.

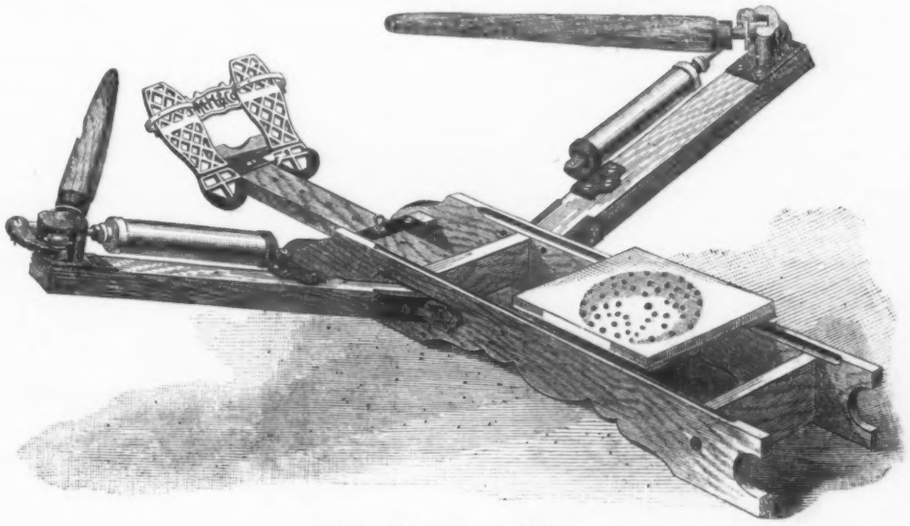
Fish Oils.—Owing to the moderate supply of crude Menhaden Oil left to tide over until the new season, pressers have advanced their prices for the refined sorts to 37¢ for Light Pressed, 38¢ for Bleached Winter, 39¢ for Extra Bleached Winter, 40¢ for Extra Bleached Winter White, 35¢ for Bank and 36¢ for Straits. There have been no changes in prices of Sperm or Whale Oils nor movement of important character.

Lard Oil.—Both export and home trade demand have been slow, and the market has shown a tendency to weaken. However, no change is quoted on ordinary-sized lots, although it is intimated that a concession of ½¢ @ 1¢ would be made to buyers of lots of 50 to 100 tons.

Spirits Turpentine. — Prices have dropped ½¢ @ ¾¢, and the market is slow at the decline under the influence of heavy stocks here and at the South. Last sales were at 34½¢ for regular and 34¾¢ for machine barrels.

Hydraulic Rowing Machine.

Merwin, Hulbert & Co., 26 West Twenty-third street, New York, are offering this machine, as illustrated herewith. As shown in the cut it is ready for use, and is referred to as having the hydraulic cylinders so constructed and arranged that the resisting power on a slow motion of the oars is slight, but is immediately increased on the stroke becoming more rapid; and as being similar in every respect to the same action in rowing a boat on the water.

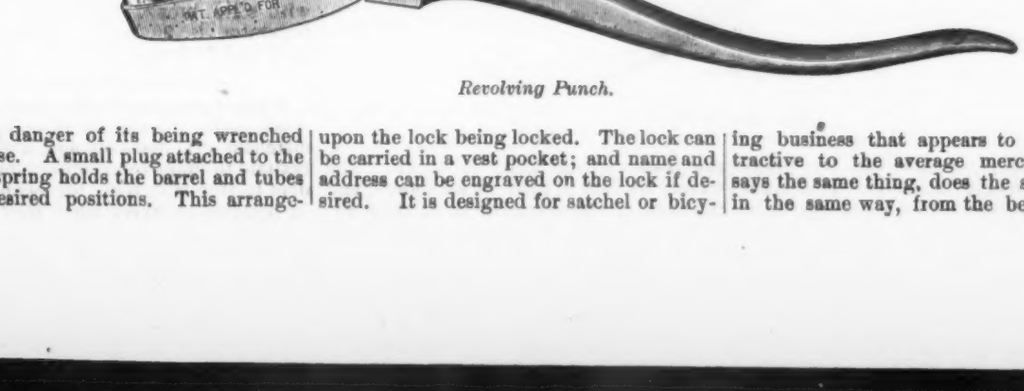


Hydraulic Rowing Machine.

It is claimed that the machine is simple in construction and cannot get out of order; that it can be adapted to the strength of any person; that the resistance is automatic, and that there is not an ounce of pressure on the recovery of the stroke. The oars turn so as to allow the feathering and dipping motions. The machine is of such a size that it can be used in an ordinary hall bedroom, and can be packed up and put away in a closet. Every machine is guaranteed by the manufacturers.

Revolving Punch.

Connecticut Mfg. Company, Hartford, Conn., Church & Sleight, 109 Fulton street, New York, agents, are offering the trade this article, as illustrated herewith. These punches are well made, of desirable size and strength, nickel plated. The revolving barrel in which the tubes are fastened has bearings on each side, there being no side draft in using it. It will cut as squarely as a plain punch, as the barrel, being supported at both ends, obviates the danger of its being wrenched loose in use. A small plug attached to the flat steel spring holds the barrel and tubes in the desired positions. This arrangement of barrel and spring is referred to as being an improvement in construction. Each punch is packed in a separate box with labels on the end and top of cover. The label on the cover has cuts of the punch, the whole making an attractive package, while the punch presents a neat and well-finished appearance.



Revolving Punch.

Satchel Lock.

Lockard & Oswald, Bloomsburg, Pa., are introducing this article, as illustrated herewith. It is 1½ inches long, 1¼ inches wide, and ⅛ inch thick. To the lock is attached a light safety chain 17 inches long, the whole being nickel plated. When unlocked, the key is held automatically in the lock, and is released only upon the lock being locked. The lock can be carried in a vest pocket; and name and address can be engraved on the lock if desired. It is designed for satchel or bicycle, and will be found convenient for fastening satchel, overcoat or umbrella to the seat in the waiting room or train.

Satchel Lock.

Have you done all for your business that you possibly can? Have you seriously thought how it can be improved upon? The misfortune is that the bulk of the merchants do not seriously think in this line. They set out for themselves with a certain goal to reach, and when they have got there their ambition ceases. We have seen in many cases where the father has left a business to the son and the son has never made the least effort to improve upon what has been left to him. He has simply gone along in the old rut and been perfectly satisfied with a kind of mechanical conduct of the business. There is something about this method of transacting business that appears to be very attractive to the average merchant. He says the same thing, does the same thing, in the same way, from the beginning to

the end. There is no sparkling genius that brings itself out, but everything is allowed to go on just the same "as the old man left it." This is unquestionably a gigantic mistake.

Gloekler's Improved Refrigerator Fastener.

Bernard Gloekler, 1117 and 1119 Penn avenue, Pittsburgh, Pa., is offering this article, as illustrated in Fig 1. The construction of the fastener is plainly shown in this cut, combining simplicity and strength. This is designed particularly for shop refrigerators, the heavy doors of which require forcing shut. Fig. 1 shows how the door is forced shut with the fastener, while Fig. 2 illustrates the manner of forcing the door open. The fastener is made in three sizes, all parts being tinned.

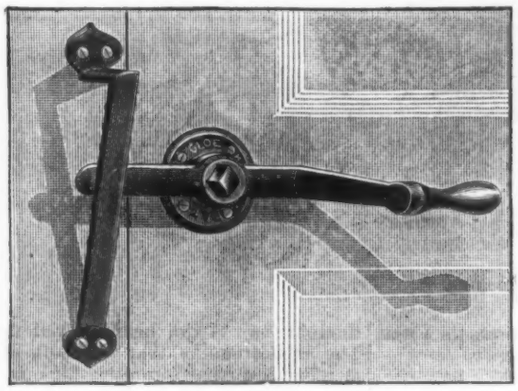


Fig. 1.—Refrigerator Door Fastener.

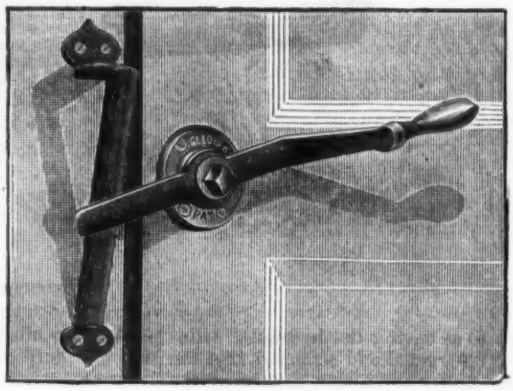


Fig. 2.—Forcing the Door Open.

Ideal Bullet Sizer.

The Ideal Mfg. Company of New Haven, Conn., are introducing an implement for sizing bullets, as illustrated herewith. The die swings upon centers, which are located near the top; the presser punch is also swung upon a pivot which, while forcing the bullet through the die, will keep it, it is stated, in perfect alignment with the pressure. This construction also permits the placing of the die near the joint, thereby giving the required power with shorter levers, which makes the tool a handy and convenient length. The tool will be the same for all calibers, the die only being made for the caliber desired. They will be interchangeable and for all standard sizes from .22 to .50 caliber. The value of this tool will be appreciated by those who have arms of different calibers, or those who may desire bullets of a special diameter. It is made so that dies of any caliber can be used in it.

Ideal Bullet Sizer.

Owing to the difference in the shrinkage of bullet metals composed of lead and tin in different proportions, it is advisable to have molds made large enough to accommodate the various mixtures and size the bullets after being cast to make them perfectly round and of the exact diameter. It is stated that riflemen desirous of lighter or heavier bullets than are manufactured for their arms may select those that are a trifle larger and size them to the diameter wanted, thus saving the expense of a special mold.

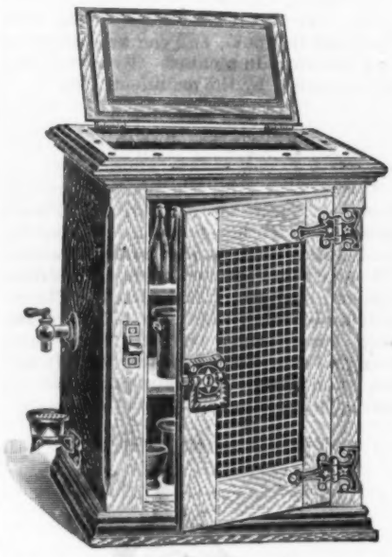
The Dandy Knife Sharpener.

F. C. Christy & Co., 38 and 40 South Jefferson street, Chicago, are manufacturing the knife sharpener shown in the accompanying illustration, which gives a good idea of its construction and the method of its use. The sharpener consists, it will be seen, of an iron frame carrying two emery wheels, between which the blade of the knife is drawn. The wheels are held in place by set screws, and the slots in the frame allow of their adjustment to compensate for wear. The sharpeners are thus very durable, and will perform their work until the wheels are worn out. The device is designed to be fastened to the wall, post or table in any convenient place. The simplicity, cheapness and ease and effectiveness of operation are points made by the manufacturers in regard to this knife sharpener.

The Dandy Knife Sharpener.

The North Star Nursery Refrigerator.

Among goods recently put on the market by the George M. Shirk Mfg. Company, 112 Lake street, Chicago, Ill., is the new North Star Hardwood Ash Nursery Refrigerator, a general view of which is shown in the accompanying illustration. This is a combination of a water cooler and refrigerator and is described as being especially convenient for the nursery or sick room. It is provided with large iron porcelain lined tank, holding over 6 gallons, for ice or drinking water. The fancy faucet is of solid bronze, and there is an adjustable cup stand, as shown in the engraving. There is also a large provision chamber with three shelves for milk or anything that it may be desired to keep cool. The refrigerator is finished with solid bronze trimmings. The refrigerator is 20 inches wide, 18 inches deep and 24 inches high.



The North Star Nursery Refrigerator.

When a customer finds out he can buy goods under the regular price, he has the merchant at a disadvantage, and will not hesitate to improve his opportunity. Nor does it stop with him, for people delight in boasting to others when they secure a

cut in prices. Thus the merchant's own business is demoralized, and his competitors, with whom he ought to live in harmony, are justly incensed. A merchant is just as much entitled to get from customers in the money received for goods a legitimate profit as to get the cost of goods. The merchant cheats himself who sells goods without profit. It would be a good thing for some merchants, and it would not hurt any, to write out the last two sentences, underscore them in red, and stick them up in their counting rooms, where they will often meet the eye.—*Michigan Tradesman.*

Cast-Iron Enameled Ice Cream Storage Can.

The Stuart & Peterson Company, Philadelphia, Pa., are offering the trade this article, as illustrated in Fig. 1. It is claimed that no lead or other poisonous

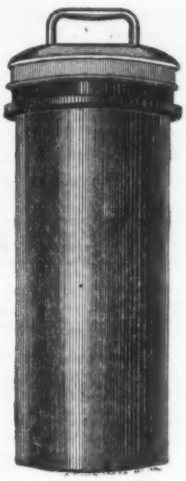


Fig. 1.—Ice Cream Storage Can.

oxides are used in the enamel, that the can not only keeps creams and ices perfectly pure, but that discoloration is impossible, and that cream can be kept in this can an indefinite length of time, thus saving the price of it in a short time.

Fig. 2.—Cast-Iron Enameled Cover.

Fig. 2 shows their cast-iron enameled cover, which is furnished with the can when so ordered, at an advanced price. It is stated that this cover removes all the objections to tin covers, preventing rust drippings, so sommon to tin covers.

A new roller bath has been in operation in the galvanizing department of the Standard Iron Company, Bridgeport, Ohio, for about a month past, and is claimed to be working in a very satisfactory manner. It is the invention of W. J. Wood, superintendent of the galvanizing department. It is claimed to do the same amount of work in a day that is done in the ordinary tank bath, and does it with better results, and at the same time requires a less number of men to operate it. The tank is semi-cylindrical in shape, 4 feet deep, 4 feet wide and 8 feet long, and 1000 sheets per day may be galvanized with a crew of four men. Instead of submerging the sheets sidewise, as is ordinarily done, they are put in end first and passing around through guides are brought out in the same condition. The rolls which the sheets are passed through on leaving the bath clean them thoroughly, thus doing away with the sweeper and his helper. At the same time the coating is equally distributed over the sheets, whereas before one side was always a little thicker than the other, and one edge rough. The spangles on the sheets are brought out much more distinctly, and customers who have been using these sheets are highly pleased with them. The other galvanizing tank of the firm will also be changed to use this system in a short time.

The growth of the Western Territories is unchecked. The Secretary of the Interior finds that in Arizona an estimated increase of 10,000 in population is claimed, making the present population about 70,000. The Governor of New Mexico claims that the Territory now has a population of 153,076, entitling it to admission as a State. In Utah the population is estimated by the Governor to be 215,000. The population of Oklahoma, which in May, 1890, was found to be 60,147, is now estimated at 80,000.

At St. Paul, on Saturday last, the Great Northern Railway Company let the contract for the last 216 miles of their Pacific extension, between Stevens' Pass and Chattaroy, Wash. From Rock Island Rapids the road follows the Columbia River up the east bank to Wenatchee. At that point will be built a bridge 3200 feet long, to cost $500,000. Immediately east a tunnel 8000 feet long will be constructed, and under the contract the 216 miles must be completed in a year.

In the case of Adams *vs.* the Bellaire Stamping Company, the United States Supreme Court has affirmed the judgment of the Circuit Court of the Southern District of Ohio.

Chicago has been estimating anew the wheat requirements of Europe, and it is now believed that 435,000,000 bushels will be needed, and 335,000,000 bushels of rye. It seems almost impossible that Europe will want so much wheat, but by reason of the failure of the rye crop the requirements will be large. It is supposed that the requirements are 400,000,000 bushels and that Russia has furnished 32,000,000 bushels and India and other sources 68,000,000 bushels, there yet remains 300,000,000 bushels to be supplied, nearly all of which must come from this country. Our capacity for the task can be estimated approximately:

	Bushels.
Total crop and surplus	640,000,000
Consumption and seeding	378,000,000
Exportable surplus	262,000,000
Amount already exported	87,383,000

The new concentrating mill of Witherbee, Sherman & Co. will soon be ready for operations It will handle 600 tons of crude ore per day.

A shipment of 20 tons of block tin from Durango, in Mexico, will be due in Pittsburgh in a few days.

Three steel masts on the United States cruiser at the Brooklyn Navy Yard are being replaced by spars of wood. The masts weigh 78 tons, and tend to make the vessel crank.

CONTENTS.

CURRENT HARDWARE PRICES.

DECEMBER 2, 1891

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' Prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated, that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.
Domestic ₩ doz $3.00, 33⅓%
Excelsior ₩ doz $10.00 .50&10&2%
North's list net @10%
Zimmerman's—See Fasteners Blind

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils.—
Eagle Anvils, ₩ ℔ 10¢ .15@15&5%
Peter Wright's 11@11½¢
Armitage's Mouse Hole 10½@11¢
Armitage's Mouse Hole, Extra 12@12½¢
Trenton 10@10½¢
Wilkinson's 10½@11¢
Moore & Barnes Mfg. Co 33⅓%

Anvil Vise and Drill—
Millers Falls Co., $18.00 20%
Cheney Anvil and Vise 25%
Allen Anvil and Vise, $5.00 40&10%
Star 45&5%

Apple Parers—See Parers, Apple, &c.

Augers and Bits—
Douglass Mfg. Co. } 70&10@70 &10&5%
Wm. A. Ives & Co. }
Humphreysville Mfg. Co. }
French, Swift & Co. (F. H. Beecher, P. S. & W. Co. }
Rockford Bit Company }
Cook's, Douglass Mfg. Co. 55%
Cook's, N. H. Copper Co. 50&10@50&10&5%
Ives' Circular Lip 60%
Patent Solid Head 30%
C. E. Jenning & Co., No. 10, extension lip 40%
C. E. Jennings & Co., No. 30 60%
C. E. Jennings & Co., Auger Bits, ₩ set, 22½ quarters, No. 5, $5; No. 30, $3.50 20%
Lewis' Patent Single Twist 45%
Russell Jennings' Augers and Bits 25&10%
Imitation Jennings' Bits 60@60&10%
Pugh's Black 20%
Car Bits 60@60&10%
Car Bits, P. S. & W. Co. 60&10%
Snell's Car Bits 60%
L. Hommodieu Car Bits 15&10%
Forstner Pat. Auger Bits 20%
Cincinnati Bell-Hangers' Bits 50&10%

Bit Stock Drills—
Morse Twist Drills 50&10&5%
Standard 50&10&5%
Cleveland 50&10&5%
Syracuse, for metal 50&10%
Syracuse, for wood (wood list) 30@30&5%
Cincinnati, for wood 30&10%
Cincinnati, for metal 45&10%

Expansive Bits—
Clarks' small, $18; large, $26 .35@35&10%
Ives' No. 4, ₩ doz $60 40%
Swan's 40%
Steer's, No. 1, $26; No. 2, $22 35%
Stearns' No. 2, $48 20%

Gimlet Bits—
Common ₩ gross $2.75@$3.25
Diamond ₩ doz $1.10 .25&10%
Bee 25@25&5%
Jennes Gut, Shepardson's 45@45&10%
Double Cut, Ct. Valley Mfg. Co 30&10%
Double Cut, Hartwell's, ₩ gro $5.25
Double Cut, Douglass' 40&10%
Double Cut, Ives' 60@60&10%

Hollow Augers—
Ives } 33⅓ @
French, Swift & Co. } 33⅓&10%
Douglass' }
Bonney's Adjustable, ₩ doz $48 40&10%
Stearns' 30&10%
Ives' Expansive, each $4.50 50&5%
Universal Expansive, each $4.50 20%
Wood's 25@25&10%
Cincinnati Adjustable 25&10%
Cincinnati Standard 25&10%

Ship Augers and Bits—
L'Hommedieu's 15&10@15&10&5%
Watrous' 15&10@15&10&10%
Snell's 15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls—
Awls, Sewing, Common ₩ gr $1.70, 45%
Awls, Should. Peg ₩ gr $2.45, 50@50&10%
Awls, Pat. Peg ₩ gr 63¢ 50@50&10%
Awls, Shouldered Brad 2.70 ₩ gr 35%
Awls, Handled Brad $7.50 ₩ gr 45%
Awls, Handled Scratch ₩ gr, $7.50 35&10%
Awls, Socket Scratch, ₩ doz, $1.50 25@30%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality, best brands	$7.00 @	$7.50
First qual., other brands	6.62½ @ 6.75	
Second quality	6.00	6.50

Axle Grease—See Grease, Axle.

Axles—
No. 1 4¼@5¢, No. 2 5½@6¼¢ }
Nos. 7 to 14 55&5% } 3% cash
Nos. 15 to 18 47½% }
Nos. 19 to 22 70% }
Concord Axles, loose collar 5¢@6¢
Concord Axles, solid collar 6¢@7¢
National Tubular Self-Oiling 33⅓&@33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—
Spring Balances 40%

	No. 2000	20	30
Chatillon, ₩ dos	$0.80	0.95	1.75 net
Chatillon Straight Balances			40%
Chatillon Circular Balances			50&10%

Barb Wire.—See Wire, Barb.

Bars.
Crow—
Cast Steel ₩ ℔ 3½¢
Iron, Steel Points ₩ ℔ 3¢

Basins, Wash—
Standard Piberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—
Scale Beams, List Jan. 12, '83 .50&10@50&10&5%
Chatillon's No. 1 40%
Chatillon's No. 2 50%
Custer's 33⅓%

Beaters—
Egg—
Dover ₩ doz $1.50
Duplex (Standard Co.) ₩ doz $1.25
Rival (Standard Co.) ₩ doz $1.00
Duplex Extra Heavy (Standard Co.) ₩ doz $3.50
Bryant's ₩ gro $14.00
Double (H. & R. Mfg. Co.), ₩ gro. No. 0, $12.00; No. 1, $15.00; No. 2 $36.00
Easy (H. & R. Mfg. Co.) ₩ gro $12.00
Triple (H. & R. Mfg. Co.) ₩ gro $16.50
Spiral ₩ gro $4.25 @ 4.50
Improved Acme (H. & R. Mfg. Co.) ₩ gro $9.00
Paine, Diehl & Co.'s ₩ gro $24.00
Silver & Co. ₩ doz $5.50
Culinary—
Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2 .20%

Bells—
Cow—
Common Wrought 60&10%
Western, Sargent's list 70&10%
Kentucky, "Star" 20&10%
Kentucky, Sargent's list 70&10%
Kentucky Durham 70&10
Dodge, Genuine Kentucky .70@70&10%
Texas Star 60&10@50&10&5%
Door—
Gong, Abbe's 33⅓&10%
Gong, Yankee 45&10%
Gong, Barton's 40&10@50%
Crank, Taylor's 25&10%
Crank Brooks' 50&10&2%
Crank Cone's 10%
Crank, Connel's 20&10%
Lever, Sargent's 60&10%
Lever, Taylor's Bronzed or Plated net
Lever, Taylor's Japanned 25&10%
Lever, R. E. M. Co.'s 50&10&2%
Pull, Brook's 50&10&2%
Electric,
Wollensak's 20%
Bigelow & Dowse 20%
Taylor's 20%
Hand—
Light Brass } See Trade Report
Extra Heavy }
White Metal }
Silver Chime 33⅓&10%
Globe Cone's Patent) 25&10@35%
Miscellaneous—
Call ₩ ℔ 3¢@3½¢
Farm Bells 40@40&5%
Steel Alloy Church and School Bells .40%

Bellows—
Blacksmiths' 60&5@65%
Molders' 40@40&10%
Hand Bellows 40&10@50%

Belting, Rubber—
Common Standard .70@70&10&5%
Standard 70@70&5%
Extra 60@60&10%
N.Y.B.&P.Co., Carbon 60%
N.Y.B.&P.Co., Diamond 50%
N.Y.B.&P.Co., Para 40%

Bench Stops—See Stops, Bench.

Benders and Upsetters, Tire.
Stoddard's Lightning Tire Upsetters .15%
Detroit Perfected Tire Bender .15%

Bits—
Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—
Ordinary Tackle, list May 20, 1889 .70&10@—%
Cleveland Block Co., Mal. Iron 50%
Moore's Novelty, Mal. Iron 50%
Sure Grip Steel Tackle Blocks 25%

Boards, Stove.
Wood Lined Crystal 50%
Oxidized 45%
Embossed 50%
Paper Lined Zinc 55%
Crystal 55%
Embossed 55%
New Tacoma 55%

Bolts—
Carriage, Machine, &c.—
Com. list June 10, '84 .70&10&12½&2%
Genuine Eagle, Norway, list Oct., '84 .80@80&10%
Phila. pattern, list Oct. 7, '84 .75@75&10%
R.B.&W., old list 70%
Machine, list Jan. 1, 1890 .75&10@75&10&5%
Bolt Ends, list Jan. 1, 1890 .75&10@75&10&5%
Door and Shutter—
Cast Iron Barrel, Square, &c. .70@70&10%
Cast Iron Shutter Bolts 70@70&10%
Cast Iron Chain (Sargent's list) .65&10%
Ives' Patent Door Bolts 60@10@60&10&5%
Wrought Barrel 70@70&10%
Wrought Square 70@70&10%
Wr't Shutter, all Iron, Stanley's .60&10%
Wr't Shutter, Brass Knob, " .40&10%
Wr't Shutter, Sargent's list 60&10%
Wr't Sunk Flush, Sargent's list .55&10%
Wr't Sunk Flush, Stanley's list .50&10%
Wr't B.K.Flush. Com'n " .55&10%

Stove and Plow—
Stove .60%
Plow .60&5%
R. B. & W., Plow .55%
Tire—
Common, list Feb. 28, '83 65%
Port Chester Bolt and Nut Company: Empire, list Feb 28, '83 65%
Keystone, Philadel., list Oct. '84 .80%
Norway, Phila., list Oct. '84 .75%
American Screw Company: Norway, Phil., list Oct. 16, '84 .75%
Eagle, Phil., list Oct. 16, '84 .80%
Philadel., list Oct. 16, '84 .80%
Bay State, list Feb. 28, '83 .65%
R.B.&W., Philadel., list Oct. 16, '84 .80%

Borers, Tap.
Common and Ring .20&10%
Ive's Tap Borers .33⅓&5%
Enterprise Mfg. Co. .20&10@30%
Clark's .33⅓&35%

Borax ₩ ℔ 9½@10½¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.
Per ℔ 2¾¢

Braces.—
American Bit Brace Co.: Nos. 10, 12, 20 .60&10%
Nos. 11, 21, 24, 27 .70&10%
Nos. 22, 23, 25 .60&10&5%
Nos. 13, 26, 36, 37 .70&10&5%
Ball Braces, net $1.12 to $1.25
Amidon's Barker's Imp'd Plain .75&10@80%
Barker's Imp. Nickeled .65&10@70%
Ratchet .75&10@80%
Eclipse Rachet .60%
Globe Jawed .40@40&10%
Corner Brace .40@40&10%
Universal, 8 in., $2.10; 10 in. $2.25
Buffalo Ball $1.10@$1.1
Barber's, Nos. 10 to 16 50%
Nos. 30 to 33 50%
Nos. 40 to 63 .50&10%
Saxton's, Barker's Imp. Polished .75&10@80%
Barker's Imp. Nickeled .65&10@70%
Ratchet, Polished .50&10@60%
Ratchet, Nickeled .40&10@50%
Buffalo Ball net, $1.10@$1.15
Bartholomew's, Nos. 25, 27 and 30 .50&10@60&5%
Nos. 117, 118, 119 .70@70&5%
Common Ball, American $1.00@$1.10
Fray's Genuine Spofford's .50&5@50&10%
Fray's No. 70 to 120, 81 to 123, 207 to 414 .50&10%
Ives' New Haven Noveity .70@70&5%
New Haven Ratchet .60&5@60&10%
Barber Ratchet .60&5@60&10%
Barbers .60&5%
Spofford .60&5@60&10%
Osgood's Ratchet .40&10@50%
P. S. & W. Co., Peck's Patent .60%

Brackets—
Shelf, plain, Regular list 65@70%
Sargent's list 60⅔@66⅔&10%
Shelf, fancy, Fargen's list .66⅔@66⅔&10%
Other makes at a wide range of prices.

Bright Wire Goods—See Wire.

Broilers—

Henis' Self-Basting.	Inch	9	10	9x11
	Per doz	$4.50	5.50	6.50

New Haven 50%
Wire Goods Co 65&10%
Morgan Odorless ₩ doz $12, 33⅓%

Buckets, Well.
Galvanized—
Hill's ₩ dos, 12 qt, $4.25; 14 qt, $5.2.
Iron Clad ₩ doz. 14 qt, $4.25@$4.5
Helwig's Flat Iron Band $3.75
Helwig's Wired Top ₩ doz $4.00

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers Butchers'.

Butts—
Brass—
Wrought Brass .75&10@80%
Cast Brass, Tiebout's 50%
Cast Brass, Fast 33⅓&10%
Cast Brass, Loose Joint .33⅓&10%
Cast Iron—
Fast Joint, Narrow .50&10&5@60%
Fast Joint, Broad .60&10@60%
Loose Joint } .70&10 @75%
Loose Joint, Japanned }
Loose Joint, Jap. with Acorns }
Parliament Butts }
Mayer's Hinges }
Loose Pin, Acorns }
Loose Pin, Acorns, Japanned }
Loose Pin, Acorns, Japanned, Plated Tips }
Wrought Steel—
Fast Joint, Narrow } .70&10 @75%
Fast Joint, Lt. Narrow }
Fast Joint, Broad }
Loose Joint, Broad }
Table Butts, Back Flaps, &c }
Inside Blind, Regular }
Inside Blind, Light }
Loose Pin }
Bronzed Wrought Butts .60%

Calipers—See Compasses.

Calks, Toe—
Gautier, One Prong, Blunt .6½@6¾
Burke's, One Prong, Blunt .6½@6¾
Burke's, Two Prong, Blunt .7¼@8¢
Burke's, One Prong, Sharp .6½@7¢

Can Openers—See Openers, Can.

Caps—
Percussion, ₩ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's .35@37¢
E. B. Trimmed Edge, 1-10's .47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's .47@50¢
Musket Waterproof, 1-10's .50@53¢
G. D. .27@30¢
S. B. Genuine Imported .45¢
Eley's E. E. .55¢ @ 58¢
Eley's D Waterproof, Central Fire .$1.60
Primers—
Berdan Primers, $1.00 2%
B. L. Caps (for Sturtevant Shells) $1.00, 2%
All other Primers, $1.20 2%

Cards—List January 28, 1891.
Watson's Cotton, Wool, Horse and File 25%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sweepers, Carpet.

Cartridges—
Rim Fire Cartridges .50&5&2%
Rim Fire Military .15&2%
Cent. Fire, Pistol and Rifle .25&5&2%
Cent. Fire, Military and Sporting 15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.
Blank Cartridges, 22 cal., $1.75 2%
Blank Cartridges, 32 cal., $3.50 2%
Primed Shells and Bullets .15&5&2%
B. B. Caps, Round Ball, $1.75 2%
B. B. Caps, Con. Ball, Swgd., $2.00 2%

Casters—
Bed } Brass .55@55&10%
Plate } Others .60@60&10%
Shallow Socket }
Deep Socket .40&10%
Yale Casters, list May, 1884 .80&10@40%
Yale, Gem .60@60&5%
Martin's Patent (Phœnix) .45&10@50%
Payson's Anti-friction .60@60&10%
Giant Truck Casters .30%
Stationary Truck Casters .60&10%
Socket Truck Casters .50%

Cattle Leaders—See Leaders, Cattle.

Cement.
Victor Elastic .5 ℔ pails ₩ ℔ 5

Chain—
Trace, Wagon and Fancy Chains, List revised April 21, 1890 .60@60&5%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.75	5.45	4.55	4.00	3.65	3.50	3.40	3.30

Less than cask lots, add ½¢@1½¢ ₩ ℔.
German Coil, list Oct. 6, 1890 .60@60&5%
German Halter Chain, list Oct. 6, 1890 .60@60&5%
Covert Halter .60&2%
Covert Traces .35@3%
Covert Heel Chain .50&2%
Oneida Halter Chain .60@60&5%
Galvanized Pump Chain ₩ ℔ 5½@6¢
Jack Chain, Iron .75&10@80%
Jack Chain, Brass .75@75&10%

Chalk—
White, case lots, ₩ gr 50¢; small lots 55 @56¢
Red, case lots ₩ gr 67¢; small lots 77 @78¢
Blue, case lots ₩ gr 75¢; small lots 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—
Socket Framing and Firmer.
P. S. & W. }
New Haven }
Witherby } .75 @ 75&10%
Mix }
Ohio Tool Co. }
Douglass .75@75&5%
Buck Bros. 30%
Merrill .60&10@60&10&5%
L. & I. J. White .30@30&5%
Tanged and Miscellaneous.
Tanged Firmers .40&10@50%
Butchers' $4.75@$6.00
Spear & Jackson's $6 to $
Buck Bros. 30%
Cold Chisels, ₩ ℔ .15@10%

Chucks—
Beach Pat. each, $8.00 20%
Morse's Adjustable, each, $7.00, 50@30&5%
Danbury each, $6.00, 30@30&5%
Syracuse, Balz Pat. 25%
Graham Patent 33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks 33⅓%
Universal Lathe Chucks 40%
Independent Lathe Chucks 40%
Drill Chucks 15%
Union Mfg. Co.,
Victor $3.50, 25%
Combination 40%
Universal 40%
Independent 40%

Churns.
Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal. $4.25.
McDermaid Star Barrel Churn, each, 6 gal., $3.60; 10 gal., $2.75; 15 gal. $3.00 20 gal., $3.25.

Calmps—

R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....25&10%

Cleavers.

Butchers'.

Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—

Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16 65&5%
Superior Axle Clips.....60%&5&70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₩ ℔, 5½¢
Steel Felloe Clips.....₩ ℔, 5¢
Baker Axle Clips.....25%

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.

Hardware list.....50&2%

Coffee Mills—See Mills, Coffee

Collars, Dog, &c.

Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company.....50&10@60%

Combs, Curry.

Fitch's.....50&10@50&10&10%
Rubber, per doz $10.00.....20%
American Curry Comb Co.....

Compasses, Dividers, &c.—

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

Coopers' Tools—See Tools, Coopers'.

Cord—

Sash.

Common.....₩ ℔, 10¢ @ 11¢
Patent, good quality.....₩ ℔, 12 @ 12¢
White Cotton Braided, fair.₩ ℔, 24½@25¢
Common Russia Sash.....₩ ℔, 12½@13¢
Patent Russia Sash.....₩ ℔, 14¢
Cable Laid Italian Sash.....₩ ℔, 21@22¢
India Cable Laid Sash.....₩ ℔, 12¢
Silver Lace—
A Quality, White, 50¢.....25 %
A Quality, Drab, 55¢.....25 %
B Quality, White, 30¢.....10 %
B Quality, Drab, 35¢.....10 %
Sylvan Spring Extra Braided White,34¢
Sylvan Spring, Extra Braided, Drab..39¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....26¢
Massachusetts, White.....26¢
Samson—
Braided, White Cotton, 50¢..30¢&30&5%
Braided, Drab Cotton, 55¢...30¢@30&5%
Braided, Italian Hemp, 55¢..30¢&30&5%
Braided, Linen, 80¢.....30¢@30&5%
Tate's Cotton Braided, White.₩ ℔, 28¢,10%

Wire Picture.

Braided or Twisted.....75&10%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₩ doz $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—

Grain.....50&5&2@50&10&2%

Crayons.

White Crayons, ₩ gross.....10¢
D. M. Stewart Mfg. Co., Metal Workers, ₩ gr, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50.....25%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain.

Cutters—

Meat.

Dixon's ₩ doz.....40&5%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Woodruff's ₩ doz.....40&5%

Nos.	100	150
	$15.00	$18.00

Hales Pattern ₩ doz.....70@70&5%

Nos.	11	12	13
	$27.00	$33.00	$45.00

American.....30%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

Enterprise.....30%

Nos.	10	12	22	32	42
Each	$3	$2.50	$4	$6	$15

Great American Meat Cutter.....30%

Nos.	112	116	118	120	122
Each	$2.00	$2.75	$3.00	$2.50	$4.00

Miles' Challenge ₩ doz.....45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

Home No. ..... ₩ doz $26.00, 55&10%

Draw Cut, each:

Nos.	5	2	6	8
	$50	$75	$80	$225

Beef Shavers (Enterprise).....20&10@30%
Little Giant (P. S. & W. Co.).....50%
Chadborn's Smoked Beef Cutter, ₩ doz $66.00

Tobacco.

Champion.....20&10@30%
Wood Bottom.....₩ doz $5.00@$5.25
Ali Iron.....₩ doz $4.25
Nashua Lock Co.'s..₩ doz, $18.00 50@55%
Wilson's.....55%
Sargents's.....₩ doz, $24, 55&10%
Acme.....₩ doz $20.00, 40%

Washer.

Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's .....₩ doz $11.00, 33⅓&%
Penny's, ₩ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Dampers, &c—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c.—

Samson Post Hole Digger, ₩ doz $36.00, 25%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers.....₩ doz $12.50&14.00
Leed's .....₩ doz $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00&14.00
Kohler's Little Giant.....₩ doz. $18.00
Kohler's Hercules.....₩ doz.1⅞.00
Kohler' New Champion.....₩ doz. $9.00
Schniedler.....₩ doz. $18.00
Ryan's Post Hole Diggers..₩ doz $24.00
Cronk's Post Bars, ₩ doz $60.00, 50&5&50&10%
Gibbs Post Hole Digger, ₩ doz $30.00, 50¢
Imperial, ₩ doz $15.....45%

Dividers—

See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.

Money, ₩ doz.....$18&$20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's.....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll s.....25%
Ratchet, Parker's.....30@20&5%
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action...25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85

Twist Drills—

Morse.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....50&10&5%
Graham's Pat. Groove Shank 50&10&5%

Drill Bits or Bit Stock Drills—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans-See Pans, Dripping.

Drivers, Screw.

Douglas Mfg. Co.....20@20&10%
Disston's.....50%
Buck Bros.....30%
Stanley R. & L. Co.'s
Varnished Handles.....65&10%
Black Handles.....60&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60.....66⅔&10&10%
P. S. & W.....70 %
Knapp & Cowles:
No. 1.....60&20@70%
No. 2.....60&10&10@70&5%
No. 3.....60&5@60&10%
Nos, 4 and 00, Acme and Ideal..50& 5@50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ doz $6.00,25&10%
Syracuse Screw-Driver Bits...30&30&5%
Screw-Driver Bits,.....₩ doz. 50&75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets. No. 3. $12.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....25&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits.....

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery.— No. 4 to No. 54 to Flour,CF

	46 gr.	150 gr.	F. FF.
Kegs, ₩ ℔.....4½¢	5 ¢	2½¢
½ kegs, ₩ ℔...4½¢	5½¢	2½¢
¼ kegs, ₩ ℔...5 ¢	5½¢	3 ¢
10-℔ cans, 10 in case.....6 ¢	6½¢	5 ¢
10-℔ cans, less than 10.....10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.

Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood 25%

Expanded Metal.

List No. 5.

Lathing.....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....20%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Extractors, Lemon Juice—See Squeezers, Lemon.

Fasteners, Blind—

Mackrell's, ₩ dos. $1.00,.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Austin & Eddy No. 2008 ₩ gr.....$9.00
Security Gravity, ₩ gr.....$9.00
Zimmerman's .....45 %

Faucets.—

Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10%
60&10&10%
Cork Lined.....70&5&70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ dos $30.00.....20&10%
Lane's, ₩ dos $36.00.....25&10%
Victor, ₩ dos $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—

Derby and Cincinnati.....45&5%
Brewster.....60&5%

Files—

Domestic—

Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75%
(extra prices on certain sizes)
G. & H. Barnett (Black Diamond).....60&10&@60&10&5%
Eagle.....60&10&5@60&10&10%
Other makers, best brands60&10@60&20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Heller's Horse Rasps.....60&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%

Imported—

Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%

Fixtures.

Grindstone—

Sargent's Patent.....70&10%
Reading Hardware Co.....80&10%
P., S. & W. Co.....60&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—

Hay, Manure, &c., Asso List..65&5@65&10%
Hay, Manure, &c., Phila. List. 60@60&5%
Plated, see Spoons.

Frames—

Saw—

White Vermont.....₩ gro $9.00@10.00
Red, Polished and Varnished.....₩ dos $1.50, 25%

Screen, Window and Door—

Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons..33⅓@ 33⅓&10%
Stearns' Frames and Corners..25@25&10%
Cortland.....40@40&5%

Freezers, Ice Cream—

White Mountain.....60@60&5%
Granite State.....65@65&5%
Arctic .....70@70&5%
American.....60%
Buffalo Champion.....65@65&5%
Shepard's Lightning.....65@65&5%
Gem.....66%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star 60%
Peerless.....60&10%
Giant.....60%
Zero.....60&10&10%
Boss and Pet.....6C&10&10&10%
Keystone, P. D. & Co., each $1.50.....30%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.

Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10 %; 2 to 5 gro. 20 %; 5 to 10 gro.....30 %
Copper, 1 to 6 doz., 15 % ; 6 to 12 doz., 20 %; over 12 doz.....25 %

Furnaces, Soldering.

Burgess No. 3 Gem, tin reservoir....$7.00
Burgess No. 3 Gem, copper reservoir, 8.50

Fuse—Dia. 12½ %. ₩ 1000 ft.

Common Hemp Fuse, for dry ground..$2.10
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr. 4.25
Triple Taped Fuse, for very wet gr.. 5.10
Small Gutta Percha Fuse, for water. 7.10
Large Gutta Percha Fuse, for water.13.00

Gates, Molasses—

Stebbin's Pattern.....30@3C&5%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....30%
Lincoln's Pattern.....70@70&10%
Weed's.....20&10%
Boss, ₩ dos:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.

Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, Wheeler, Madden & Co 10%
Wire, Morse's.....25%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....10&10%

Gimlets—

Nail and Spike.....50&10&5%
" Eureka " Gimlets.....40&10%
" Diamond " Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
" Bee," ₩ gr $12.....25@25&5%

Glue—

Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Improved Process.....25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.

Fraser's .....Keg ₩ ℔ 4¢, Pail ₩ ℔ 5¢
Fraser's, in boxes.....₩ gr $9.50
Dixon's Everlasting, in bxs...₩ doz lb $1.20; 2 ℔ $2.00
Dixon's Everlasting....10-℔ pails, ea. 85¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones—

Small, at factory.....₩ ton $7.50@9.00
Family, regular list.....60%
Family, Cleveland Stone Co.....30 %

Grindstone Fixtures—See Fixtures Grindstone.

Hack Saws—See Saws.

Hafts, Awl.

Sewing, Brass Fer. ₩ gr, $3.50.....45&10%
Pat. Sewing, Short.$1.00 ₩ doz.....40&10%
Pat. Sewing, Long.....₩ doz $1.50
Pat. Peg, Plain Top.₩ gr $10.00...45&10%
Pat. Peg, Leather Top.₩ gr $12.00.45&10%

Halters.

Covert's, Rope, Jute ..... 60&10&10&2%
Covert's, Rope, 7-16-in., Jute.....70&2%
Covert's, Rope, ¼-in. Hemp .....60&2%
Covert's Adj. Rope Halters .....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.....
Humason & Beckley.....} 50@50&10%
Atha Tool Co.....
Verree.....
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail...40&12½%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Hartford, Nail Hammers.....40&5%
Hartford, Machinists, &c...50&5@50&10%
Magnetic Tack, Nos. 1, 2, 3, $1.35, 1.50 & 1.75.....20&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@2%
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%

Heavy Hammers and Sledges—

3 ℔ and under.....₩ ℔ 40¢ } 70@70&10%
3 to 5 ℔.....₩ ℔ 36¢ }
Over 5 ℔.....₩ ℔ 30¢ }
Wilkinson's Smiths.....10½¢@11¢₩ ℔

Handcuffs and Leg Irons—See Police Goods,

Handles—

Cross-Cut Saw Handles—

Atkins' No. 1 Loop, ₩ pair, 28¢; No. 3 13¢; No. 6, 16¢; No. 2 and No. 4 Reversible, 18¢.
Champion.....15%

Iron, Wrought or Cast—

Door or Thumb.

Nos.	0	1	2	3	4
Per doz.	$0.90	1.00	1.10	1.35	1.50

60&10&

Boggin's Latches.....₩ doz 30¢@3
Bronze Iron Drop Latches..₩ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62 Plate, $1.10; no Plate, $0.85 ..... net
Barn Door, ₩ doz $1.40.....10&10%
Chest and Lifting.....70%

Wood—

Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, &c... 40@40&5%
Brad Awl.....₩ gr $3.00
Hickory Firmer Chisel, ass'd..₩ gr 4.50 } 40&10@50
Hickory Firmer Chisel, large..₩ gr 5.00 }
Apple Firmer Chisel, ass'd...₩ gr 5.00 }
Apple Firmer Chisel, large...₩ gr 6.00 }
Socket Firmer Chisel, ass'd...₩ gr 3.00 }
Socket Framing Chisel, ass'd..₩ gr 5.00 }
J. B. Smith & Co.'s Pat File.....50%
File, assorted.....₩ gr ? 75 } 50%
Auger, assorted.....₩ gr 5.00 }
Auger, large.....₩ gr 7.00 }
Pat. Auger, Ives'.....20&10%
Pat. Auger, Douglass.....₩ set $1.25
Pat. Auger, Swan's.....₩ set $1.00
Hoe, Rake, Shovel, &c.....50&10%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track.....65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....55%
Climax Anti-Friction for Wood Track55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling.....50@50&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Cheritree.....50&10%
Kidder's.....50&10@60%
Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₩ dos pr. 4 in, $10.00; 5 in. $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50@5%
Wood Track Iron Clad, ₩ ft, 10¢.....50 &15@60%
Carrier Steel Anti-Friction.....50&10%
Architect, ₩ set $6.00.....20%
Eclipse.....20&10%
Felix, ₩ set $4.50.....20%
Richards'.....80@80&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@50&5%
Lane's Parlor.....40%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20&10@20&10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American, ₩ set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....40%
Paragon, Nos. 1, 2 and 3.....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron.....50%
Nickel, Malleable Iron and Steel.....40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star.....40&10@40&10&5%
May.....50&5@50&10%
Barry, $6.00.....40&10%
Interstate.....50%
Magic.....45%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Blood's
Hunt's
Hurd's
Mann's
Peck's
Underhill's
Buffalo Hammer Co.
Fayette R. Plumb.
C. Hammond & Son.
Kelly's
Sargent & Co.
P., S. & W. Co.
Ten Eyck Edge Tool Co.
} 40 & 10 @ 50&5 %
Collins.....10%
Schulte, Lohoff & Co.....50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2%
Palmer.....50&5&10%
Seymour.....70&2%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50.....75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's Nos. 1, 3, 5, 11, 13.....75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible..70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....₩ dos $4.40, 60%
N. E.....₩ dos $7.00, 55%
M. E. Reversible.....₩ dos $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₩ dos $5.00, 55&10%
Automatic.....₩ dos $12.50, 50%
Common Sense.....₩ dos pair $4.50, 50%
Seymour's.....45&10%
Shepard's.....60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts.....40%
Union Spring Hinge Co.'s list, March 1886.....2 %
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent.....40%
Acme.....30%
C. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem, and Star.....20%
Oxford.....20%
Wiles'.....10%
Devore's.....40%
Rex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Stearn's.....50&10%
Samson, ₩ gross.....$14.00
} Extra 5&10 % often given.

Wrought Iron Hinges.
List February 24, 1891.
Strap and T.....50&10%
Corrugated Strap & T.50&10@50&10&10%
Screw Hook and Strap { 6 to 12 in., ₩ D. 4¢ / 14 to 20 in., ₩ D.3½¢ / 22 to 36 in., ₩ D. 3¢
Screw Hook and Eye... { ⅛ in., ₩ D 7½¢ / ¼ in., ₩ D 5½¢ / ⅜ in., ₩ D 4½¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges { 8, 10 & 12 in., ₩ D.....5¢ / "Providence" { over 12 in., ₩ D.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. } 50&10&5 @60%
Am. Axe and Tool Co., S. & O. Pat.
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70%
Planter's, Cotton &c.....70%
Warren Hoe.....60%
Magic.....₩ dos $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat.....₩ dos $18.....60%

Bit.

Extension,
Barber's, ₩ dos $15.00.....40@40&10%
Ives, ₩ dos $20.00.....60&5@60&10%
Diagonal.....₩ dos $24.00, 40%
Angular.....₩ dos $24.00, 40&5%

File and Tool—

Bals Pat.....₩ dos $4.00; 25%
Nicholson File Holders.....20%
Dick's Tool Holder.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list.....
Bird Cage, Reading.....
Clothes Line, Sargent's list..
Clothes Line, Reading list.
} 60&10@60&10&10%
Ceiling Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading.50&10@50&10&10%

Wrought Iron—

Cotton.....₩ dos $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)..50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60@60&10%
Wire Coat and Hat, Miles', list April, 1886.....60@50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard.60@60&10%
Handy Hat and Coat.....50&10@60%
Steady Ceiling Hooks.....50&10@60%
Belt.....80@80&10%
Atlas, Coat and Hat.....60@60&10%
Bright Wire Goods, see *Wire*.

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₩ dos $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks.....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75@75&5%
Standard.....60&10&5@60&10&10%
Extra.....50&10@60%
N. Y. R. & P. Co., Para.....25&5%
N. Y. R. & P. Co., Extra.....40@40&5%
N. Y. R. & P. Co., Dundee....50&10 @ 60%

Huskers—

Blair's Adjustable.....₩ gr $8.00
Blair's Adjustable Clipper.....₩ gr 7.00
Hubbard's Solid Steel.....₩ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory....₩ 100 ℔, $2.30@$2.40
Self-Heating.....₩ dos $9.00 net
Self-Heating, Tailors'....₩ dos $18.00 net
Mrs. Pott's Irons.....60@60&10%
Enterprise Star Irons.....60@60&10%
XX Cold Handle Sad Iron.....50&5@60%
Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons.....25%
B. B. Sad Irons, ₩ ℔.....3 @3¼¢
Combined Fluter and Sad Iron, ₩ dos, $15.00.....15%
Fox Reversible, Self-Fluter ₩ dos $24.00
Chinese Laundry (N.E. Butt Co.) 8¼¢, 15%
New England.....8¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓ %
National Self-Heating.....30 %

Soldering—

Soldering Coppers.....₩ ℔ 22 @ 23¢
Covert's Adjustable, list Jan. 1 1886. 35&2%

Irons, Pinking, per dos., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy.....40%
Victor.....40%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld. W.M. list Jan. 1, '91.20%
Enameled and Tea—See Hollow Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₩ dos $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives, List Dec. 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AAA1, Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....20@25%
Ames' Bread Knives. ₩ dos $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn Auburn Mfg. Co. Crescent.....$3.50

Corn—

Bradley's.....10%
Wadsworth's.....25%

Drawing—

Witherby
P. S. & W.
Mix
New Haven
} ..75 @ 75&10 %
Merrill.....60&10@60&10&5%
Douglas.....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning, from jobbers....$8.00 @ $9.00
Wadsworth's.....40@7½@40&10%
Carter's Needle.....₩ dos $11.00@$11.50
Heath's.....₩ dos $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw.....40%
Nolin's Hay.....₩ dos. $7.00 @ $8.00

Mincing—

Am. (3d quality), ₩ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ₩ dos, Single, $2.00; Double, $3 40@45%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable.....₩ dos $3.00 .25%
Buffalo Double Adj'table.₩ dos $3.00 25%

Knobs—

Door Mineral.....60@65%
Door Por. Jap'd.....70@75%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture, Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₩ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladies'—

Melting, Sargent's.....55&10%
Melting, Reading.....35&10%
Melting, Monroe's Pat...₩ dos $4.00, 40%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Plain with Guards, ₩ dos.....$3.75@4.00
Lift Wire, with Guards.....$4.00@4.25
Square Plain, with Guards....$3.75@4.00
Sq. Lift Wire, with Guards.....$4.50

Police Lanterns (including packages).

2¾-inch Bull's-eye Police regular..... ₩ dos $3.60
3-inch Bull's-eye Police regular..... ₩ dos $3.90
2¾-inch Bull's-eye Police flash light.... ₩ dos $4.00
3-inch Bull's-eye Police flash light..... ₩ dos $4.50

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason, Beckley & Co.'s.....70%
Sargent's.....60%&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, eagle and Shield.....50%
Reiher's, list Feb. 20, 1891.
Bronzed Iron Rods.....50&10&10&2½
Brass, Real Bronze or Nickel Plate..80%
Excelsior.....50&10& %
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60%
Imperial.....50&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's and Tate's Chalk.....50%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....50%
Samson Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton.....45
Wire Clothes.. Nos. 18 19 20
100 ft.....$4.00 $3.50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton..₩ dos $7.50, 20%

Links, Open.

Terry's—per gro.:

Nos.	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, rev. Jan. 1, '85..33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 86 to 96.....30%
Stoddard Lock Co.....30&33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&2%
"Champion" Cab. and Combin..33⅓%
Yale.....net prices
Romer's.....25%

Door Locks, Latches, &c.

B. & E. Mfg. Co., list Mar.20, 1889.....
Mallory, Wheeler & Co., list July, '88.....
Sargent & Co., list Aug. 1, '88.....
Reading Hardware Co., list Feb. 2, '88.....
} 65&10@70% Much lower net prices often made.
Brittan, Graham & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&25%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deitz Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Shepardson or U. S.....35%
Seed's N. Y. Hasp Lock.....25%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list...70&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....25&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 505..15%
A. E. Deitz.....40%
Champon Padlocks.....40%
Hotchkiss.....30%
Star.....45%
Horseshoe.....₩ dos, $9, 40@40&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Brown's Pat.....25%
Scandinavian.....90@90&10%
E. T. Fraim's Keystone Scandinavian. Nos. 119, 120, 130 and 140.....90&10%
Other Nos.....55%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Slaymaker Barry & Co.
No. 1010 line.....85&5%
No. 41 line.....45&10%
No. 61 line.....50&5%
No. 21 line.....75%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₩ gr..33⅓%
Ferguson's.....33⅓%
Victor.....60&10&2%
Walker's.....40&10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'sed.....₩ gr $4.00
Common Sense, Nickel Plated ₩ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....30%
Payson's Perfect.....60@60&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60&10@60&10&5%
Liesche's, No. 100, ₩ gr $8; 105, $10..30%
Davis, Bronze, Barnes Mfg. Co.....50%
Champion Safety, list January, 1889..70%
Security.....70%
Buckeye.....₩ gro $4.80

Lumber Tools—See Tools, Lumber.

Lustre—

Four-ounce Bottles....₩ dos, $1.75; ₩ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas	$5.50	$6.75		50%
Snell's, Rice's Pat.	5.50	6.75	40&10&10%	
Jennings	5.50	6.75	45&15&10%	
Other Machines...	2.35	2.75		
Phillips' Patent with Augers	7.00	7.50		
Miller's Falls		7.50		25%

Fluting.

Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3¼-inch Roll, $2.15..... 35%
Eagle, 5¼-inch Roll, $2.85..... 35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each..... 35%
Crown Jewel 6 in.....$5.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each..... 35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal ₩ dos $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00..... 30%
Shepard Hand Fluter, No. 85 ₩ dos $8.00..... 40%
Shepard Hand Fluter, No. 110 ₩ dos $11.00..... 40%
Shepard Hand Fluter, No. 95 ₩ dos $8.00..... 40%
Clark's Hand Fluter, ₩ dos $15.00..... 35%
Combined Fluter and Sad Iron, ₩ dos $15.00.....30%
Buffalo ₩ dos $10.00.....10%

Hoisting—

Moore's Hand Hoist, with Lock Brake.....20%
Moore's Differential Pulley Block.....40%
Energy Mfg. Co's.....25%
Sure Grip Steel Tackle Blocks.....25%

Washing—

Anthony Wayne, ₩ dos No. 1, $51 No. 2, $45; No. 3, $42.
Western Star ₩ dos No. 2, $45; No. $48

Mallets.
Hickory ..... 20&10@20&10&10%
Lignumvitæ ..... 20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30&30&10%

Mattocks. Regular list. 60&10@60&10&5%

Measures—
Standard Fiberware, No. 1, peck, ₱ dozen, $4: ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Menders, Harness—
Per doz. $2.00

Mills.
Coffee—
Box and Side, List Jan. 1, 1888. 60&10@—%
American, Enterprise Mfg Co. 20&10@30%
The Swift, Lane Bros. ..... 20&10%

Mincing Knives—See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers—See Drawers, Money.

Mowers, Lawn.
Pennsylvania, New Model, Excelsior, Continental, &c. ..... 60@60&5%
Philadelphia ..... 60&10&10%
Perfection ..... 60&10&10%
Easy ..... 60&10@60&10&5%
Bay State ..... 60&10@60&10&5%
Other Machines ..... 60&10&5@70%

Muzzles—
Safety ..... ₱ doz, $3.00, 25%

Nails,
Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15, '89. 75&10@80%
Tack Mfrs.' list. ..... 70@70&10%
Wire Nails, Standard Penny.
Card June 1 '89 base. ..... $2.10 @ $2.20

Horse—

	Nos. 6	7	8	9	10	
Ausable	.28¢	26¢	25¢	24¢	23¢.	40&5&5&2%
Clinton, Fin.	.19¢	17¢	16¢	15¢	14¢	.30%
Essex	.28¢	26¢	25¢	24¢	23¢.	40&5&5&2%
Lyra	.19¢	17¢	16¢	15¢	14¢	.30 %
Snowden	19¢	17¢	16¢	15¢	14¢	.30 %
Putnam	.33¢	21¢	20¢	19¢	18¢.	1000 ℔ in year 15%
Vulcan	.23¢	21¢	20¢	19¢	18¢	.12½&5%
Northwest'n.	.25¢	23¢	22¢	21¢	20¢.	25@25&5%
Globe	.23¢	21¢	20¢	19¢	18¢.	20&5&5%
Boston	.23¢	21¢	20¢	19¢	18¢.	20&5&5%
A. C.	.25¢	23¢	22¢	21¢	21¢.	25&10@33⅓&5%
C. B.-K.	.25¢	23¢	22¢	21¢	21¢.	25&10@33⅓&5%
Maud S.	.25¢	23¢	22¢	21¢	21¢.	40&10 %
Champlain	.28¢	26¢	25¢	24¢	23¢.	25&10¢&10%
Saranac	.23¢	21¢	20¢	19¢	18¢	.30&10%
Champion	.25¢	23¢	22¢	21¢	20¢.	10&10&10%
Capewell	.28¢	26¢	5¢	24¢	23¢.	35&5@35&10%
Star	.23¢	21¢	20¢	19¢	18¢.	10&10@10&12½%
Anchor	.23¢	21¢	20¢	19¢	18¢	.35%
Western	.23¢	21¢	20¢	19¢	18¢	.40&10%
Empire Bronzed						.14 ₱ ℔.

Picture—
Brass Head, Sargent's list. ..... 50&10&10%
Brass Head, Combination list. ..... 50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Niles' Patent 40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	5.35¢	5.95¢ off list.
Cold Punched	5.00¢	5.10¢ off list.

In packages of 100 ℔, add 1-10¢ ₱ ℔. net; in packages less than 100 ℔, add ½¢ ₱ ℔. net.

Oakum—
Best or Government. ..... ₱ ℔ 7@7½¢
U. S. Navy ..... ₱ ℔ 6@6½¢
Navy ..... ₱ ℔ 5½@6¢

Oilers—
Zinc and Tin ..... 65&10@70%
Brass and Copper ..... 50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.00; No. 2, $4.00 ₱ doz. 10@10&5%
Malleable, Hammers, Old Pattern, same list 40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass. 50%
Olmstead's Tin and Zinc 60%
Olmstead's Brass and Copper 50%
Broughton's Zinc 60%
Broughton's Brass 50%
Gem P. D. & Co. ..... ₱ gro. $2
Steel, Draper and Williams. 50%

Openers, Can.
Messenger's Comet. ..... ₱ doz $3.00, 25%
American. ..... ₱ gross $2.75@$3.00
Duplex. ..... doz 25¢, 15&20%
Lyman's. ..... ₱ doz $3.75, 20%
No. 4 French. ..... ₱ doz $2.25, 55&60%
No. 5, Iron Handle. ..... ₱ gr $6.00, 45&50%
Eureka. ..... ₱ doz $2.50, 10%
Sardine Scissors. ..... ₱ doz $2.75&3.00
Star. ..... ₱ doz $2.75
Sprague, No. 1, $2.00 2, $2.25; 3, $2.50. 50&10&10%
Excelsior No. 1 $2.50: No. 2, $1.50. ....40%
World's Best, ₱ gross, No. 1, $12.00. No. 2, $24.00; No. 3, $36.00. ..... 50&10%
Universal, ₱ doz $3.00. ..... 55&5%
Domestic, ₱ doz $2.50. ..... 45%
Champion ₱ doz $2.00. ..... 50%

Packing, Steam—
Rubber—
Standard. ..... 60&5@65%
Extra ..... 50@50&5%
N. Y. B. & P. Co., Standard. 50%
N. Y. B. & P. Co., Empire. 60%
N. Y. B. & P. Co., Salamander. 25%
Jenkins' Standard. ₱ ℔ 80¢. ..... 25@25&5%
Miscellaneous—
American Packing. ..... 10¢@11¢ ₱ ℔
Russia Packing ..... 14¢ ₱ ℔
Italian Packing ..... 13¢@14¢ ₱ ℔
Cotton Packing ..... 15¢@17¢ ₱ ℔
Jute. ..... 7¢@8¢ ₱ ℔

Padlocks—See Locks.

Pails.
Galvanized Iron—

	Quarts	10	12	14
Hill's Light Weight, ₱ doz.		$2.75	3.00	3.25
Hill's Heavy Weight, ₱ dz.		3.00	3.25	3.75
Helwig's.		2.50	2.75	3.00
Sidney Shepard & Co.		2.35	2.85	3.05
Iron Clad		2.50	2.75	3.00
Fire Buckets		2.75	3.25	3.50

Buckets, see Well Buckets.
Indurated Fibre Ware—25%
Star Pails, 12 qt. ..... ₱ doz $5.40
Stable and Milk, 14 qt. ..... ₱ doz $6.00
Fire Pails, deep. ..... ₱ doz $5.40
" I round bottom. ..... ₱ doz $7.80
Standard Fibre Ware—

	Plain.	Decr'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.00	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt.	6.50	7.50

Pans.
Dripping.
Smalls izes. ..... ₱ ℔ 6¼¢
Large sizes. ..... ₱ ℔ 5½¢
Silver & Co. (Covered). 40%
Fry—
Standard List:

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods. ..... 75@75&10%
Acme Fry Pans ..... 60&10%
Dust—
Steel Edge, No. 1. ..... ₱ doz $1.75

Paper and Cloth—
Sand and Emery—
List April 19, 1886. ..... 50@50&10%
Sibley's Emery and Crocus Cloth. 30%

Parers.
Apple.
Advance. ..... ₱ doz $4.75
Baldwin ..... ₱ doz 5.25
Bonanza ..... each 5.00
Daisy ..... ₱ doz 4.00
Dandy ..... each 7.50
Eclipse ..... ₱ doz 4.25
Eureka, 1883 ..... each 16.00
Family Bay State ..... ₱ doz 12.00
Favorite ..... ₱ doz 5.00
Gold Medal ..... ₱ doz 4.00
Ideal ..... ₱ doz 4.00
Improved Bay State. ₱ doz $7.00 @ 30.00
Little Star ..... ₱ doz 4.50
Monarch ..... ₱ doz 13.50
New Lightning ..... ₱ doz 5.50
Oriole ..... ₱ doz 4.00
Penn ..... ₱ doz 4.00
Perfection ..... ₱ doz 4.00
Pomona ..... ₱ doz 4.00
Rocking Table ..... ₱ doz 6.00
Turn Table ..... ₱ doz 4.50
Victor ..... ₱ doz 13.50
Waverly ..... ₱ doz 4.00
White Mountain ..... ₱ doz 4.00
72 ..... ₱ doz 4.25
78 ..... ₱ doz 7.00
Potato—
White Mountain ..... ₱ doz $4.50
Antrim Combination ..... ₱ doz $5.50
Hoosier ..... ₱ doz $13.50
Saratoga ..... ₱ doz $5.50

Pencils—
Faber's Carpenters' ..... high list 50%
Faber's Round Gilt ..... ₱ gro $5.25
Dixon's Lead ..... ₱ gro $4.50
Dixon's Lumber ..... ₱ gro $6.75
Dixon's Carpenters' 10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00. ..... 60&10@60&10&5%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.
Bow—
Humason, Beckley & Co.'s. ..... 60&10%
Sargent & Co's. ..$17 and $18. ..... 60&10%
Peck, Stow & W Co. .. 60&10@50&10&5%
Curtain—
Silvered Glass. ..... net
White Enamel. ..... net
Escutcheon,
Iron, list Nov. 11, 1885. .50&10@50&10&5%
Brass. ..... 60@60&5%

Pipe, Wrought Iron—
List September 18, 1889.

1¼ and under, Plain	57½%
1¼ and under, Galvanized	47½%
1¼ and over, Plain	67½%
1¼ and over, Galvanized	55%

Boiler Tubes,

Sizes up to 2¾ in. inclusive	55%
Sizes 3 to 6 in. inclusive	65%
Sizes 7 in. and up	65%
Casing	55%
Steel Boiler Tubes	30%

Planes and Plane Irons—
Wood Planes—
Molding ..... 40&10%
Bench, First Quality ..... 50&10%
Bench, Second Quality ..... 55&10%
Bailey's (Stanley R. & L. Co.). ..... 40&10%
Iron Planes—
Bailey's (Stanley R. & L. Co.). ..... 40&10@40&10&10%
Miscellaneous Planes (Stanley R. & L. Co.) ..... 30&10@20&10&10%
Victor Planes (Stanley R. & L. Co.). ..... 20&10@30&10&10%
Steer's Iron Planes. ..... 35@35&10%
Meriden Mal. Iron Co.'s. ..... 40@40&10%
Davis's Iron Planes ..... 40@40&10%
Birmingham Plane Co. ..... 50@50&10%
Gage Tool Co.'s Self-Setting. ..... 20&10&10%
Chaplin's Iron Planes ..... 40@40&10%
Sargent's ..... 30&10@30&10&10%
Standard Tool Co. ..... 50@50&5%
Plane Irons—
Butcher's. ..... $5.00@$5.25 to £
Buck Bros 30%
Auburn "Thistle." } ..... 30&10%
Ohio. }
Sandusky. }
S. & I. J. White. 25%

Plates.
Felloe ..... ₱ ℔ 6¢@6½¢

Pliers and Nippers—
Button's Patent. ..... 50@50&10%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz ..... 20&10@33⅓&5%
Humason & Beckley Mfg. Co. .50@50&10%
Lindsay's Giant. 40%
Gas Pliers. 60%
Gas Pliers, Custar's Nickel Plated. .60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel. 35%
P. S. & W. Cast Steel 50%
P. S. & W. Tinners' Cutting Nippers, add 6% dis 10%
Carew's Pat. Wire Cutters. 20%
Morrill's Parallel, ₱ doz. $12.00. .30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—
Regular List ..... 70&10@70&10&10%
Disston's. 50%
Pocket Levels. ..... 70&10@70&10&10%
Davis Iron Levels. 30%
Davis' Inclinometers ..... 10&10%

Pouchers.
Egg.
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00. ..... 25%
Silver & Co., 6-Ring, ₱ doz $4; 3-Ring $2

Pokes, Animal—
Bishop's I. X. L. ..... ₱ doz $6.00
Bishop's O. K. ..... ₱ doz $5.25
Bishop's Pioneer ..... ₱ doz $3.75
Bishop's American ..... ₱ doz $2.75
Eagle, Double Stale. ..... ₱ doz $5.75
Eagle, Single Stale. ..... ₱ doz $3.75
Buckeye, Single Stale. ..... ₱ doz $2.75

Police Goods.
R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's. 25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00. ..... 25%
J. P. Lovell's Police Goods. 25%

Polish, Metal.
Prestoline. 50%
Prestoline Paste. 33⅓%
Gaston's Silver Compound. 33⅓%

Polish, Stove.
Joseph Dixon's. ..... ₱ gro $6.00, 10%
Gem. ..... ₱ gro $4.50, 10%
Gold Medal. ..... ₱ gro $6.00, 25%
Mirror ..... ₱ pro $6.00, —%
Lustro ..... ₱ gro $4.75
Ruby ..... ₱ gro $3.75
Rising Sun, 5 gro lots ..... ₱ gro $5.50
Dixon's Plumbago. ..... ₱ ℔ 8¢
Boynton's Noon Day, ₱ gro 13.00
Parlor Pride Stove Enamel. ₱ gro
Yates' Liquid, 2 3 5 10 gal.... ₱ gal ...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10-℔ cans, ₱ ℔ 12½¢
Jet Black ..... ₱ gro $3.50
Japanese. ..... ₱ gro $3.50
Fireside. ..... ₱ gro $2.50
Diamond O. K. Enamel. ..... ₱ gro $19.00
Bonnell's Liquid Stove Polish. ₱ gro $9.00
Bonnell's Paste Stove Polish. ₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans. ..... 12½¢
Black Jack Water Paste, 5 and 10 ℔ cans. ..... 12½¢
Nickel Plate Paste ..... ₱ gro $6.00
Crown Paste ..... ₱ gross, $7.20
Crown Paste, in 5 and 10 ℔ pails ₱ ℔ 12¢
Black Flag. ..... ₱ gross, $7.20
Black Flag, 5 and 10 ℔ pails. ₱ ℔ 12¢
Black Flag, liquid, in bottles. ₱ gro. $8.00
Diamond Rock Nickel Cleaner. ₱ gro. $10.20

Poppers, Corn—
Round or Square, 1 qt. ₱ gr $10.00@10.50
Round or Square, 1½ qt. ₱ gr $15@15.50
Round or Square, 2 qt. ₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.
Glue—
Tinned. ..... 40&10@40&10&5%
Enameled. ..... 40&10@40&10&5%
Family, Howe's "Eureka". 40%
Family, L. F. C.'s "Handy". 50%

Presses.
Fruit and Jelly—
Enterprise Mfg. Co. ..... 20&10@30%
Henis. ..... ₱ doz $3.50
Shepard's Union City 40%
Silver & Co. ..... ₱ doz $2.75

Pruning Hooks and Shears.—See Shears.

Pullers.
Nail.
Scranton ..... ₱ doz $13.00, 33⅓%
Curtiss Hammer. ..... ₱ doz $9.00
Giant, No. 1. ..... ₱ doz. $13.00, 10%
Giant, No. 2. ..... ₱ doz, $15.00, 10%
Pelican. ..... ₱ doz, $9.00, 25%
Eclipse. ..... each, $2.00 net

Pulleys—
Hot House, Awning, &c. ..... 60&10%
Japanned Screw. ..... 60&10%
Brass Screw ..... 60&10%
Japanned Side. ..... 60&5&10%
Japanned Clothes Line. ..... 50&10%
Empire Sash Pulley. ..... 55@60%
Moore's Sash, Anti-Friction. 50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50. ..... 50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70 ..... 50%
Hay Fork, "F" Common and Pat. Bushed 20%
Hay Fork, Tarbox Pat. Iron. 20%
Hay Fork, Reed's Self-Lubricating ...60%
Shade Rack 45%
Tackle Blocks. ..... See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00. ..... 40%

Pumps—
Cistern, Best Makers ..... 60@60&10%
Pitcher Spout, Best Makers. ....67½@70%
Pitcher Spout, Cheaper G'ds. .75@75&10%

Punches—
Saddlers' or Drive, good, ₱ doz. ..60@65¢
Bemis & Call Co.'s Cast Steel Drive. .50&5%
Bemis & Call Co's Springfield Socket. 50&5%
Spring, good quality. ... ₱ doz $2.50@2.66
Spring, Leach's Pat. 15%
Bemis & Call Co.'s Spring and Cheek ..40%
Solid Tinners', P. S. & W. Co. ₱ doz $1.44, 55%
Tin'rs' Hollow Punches P. S. & W. Co. 20&2%
Rice Hand punches 15%
Avery's Revolving. 40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—
Sliding Door, Wr't Brass, ₱ ℔ 35¢. 15%
Sliding Door, Bronzed Wr't Iron. ₱ ft. 7¢
Sliding Door, Iron, Painted, ₱ foot 4¢, 40%
Barn Door, Light, In. ¼ ⅜ ½
Per 100 feet. $2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—

	Small.	Med.	Large.	
Per 100 feet.	$2.15	2.70	3.25	net
Terry's Steel Rail, ₱ foot.				4½¢
Victor Track Rail, 7¢ ₱ foot.				60&5%
Carrier Steel Rail, ₱ foot				4½¢
Moore's Wrought Iron.				35%

Rakes—
Cast Steel, Association goods. ..66⅔&10%
Cast Steel, outside goods 60&10&10@70&5%
Malleable. ..... 70&10&5%
Gibbs Lawn Rake. ..... $12.00, 50&15%
Canton Lawn Rake. ..... $9.00, 50&10%
Ft. Madison Prise Bow Brace and Peerless. 60%
Fort Madison Steel Tooth Lawn Rake, $6.00. ..... 25%

Razors—
J. R. Torrey Razor Co. 20%
Wostenholme and Butcher, $10.00 to £, 10%
Jordan's AAAI, new list. ..... net
Jordan's Old Faithful, new list. ..... net
Galvanic. ..... ₱ doz $15.00

Razor Strops—See Strops, Razor.

Rings and Ringers.
Bull Rings—
Union Nut Co. 55%
Sargent's. ..... 66⅔&10@70&5%
Hotchkiss' low list. 30%
Humason, Beckley & Co.'s. ..... 70&10%
Peck, Stow & W. Co's. .50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%
Hog—
Top of the Hill Ringers. ..... ₱ doz $2.00
Top of the Hill Rings. ..... ₱ doz $1.25
Hill's Improved Ringers. ..... ₱ doz $1.25
Hill's Old Style Ringers. ..... ₱ doz $1.12½
Hill's Tongs. ..... ₱ doz $3.00
Hill's Rings. ..... ₱ doz bxs $1.00
Perfect Rings. ..... ₱ doz bxs $1.50
Perfect Ringers. ..... ₱ doz $2.15@$2.25
Blair's Hog Ringers. ..... ₱ doz $2.00
Blair's Hog Rings. ..... ₱ doz 90¢@$1.00
Champion Ringers. ..... ₱ doz $2.00
Champion Rings, Double. ..... ₱ doz $2.25
Brown's Ringers. ..... ₱ doz $2.00
Brown's Rings. ..... ₱ doz $1.15&1.25
Electric Hog Rings. ..... ₱ doz boxes $1.50
Electric Hog Ringers ..... ₱ doz $2.00

Rivets and Burrs—
Iron, list Nov. 17, '87. ..... 40%
Copper. ..... 60&10@60&10&5%
Coppered Iron, Bentine Brand. 40%

Rivet Sets—See Sets.

Rods—
Stair, Brass ..... 25&2%
Stair, Black Walnut ..... ₱ doz 40¢

Rollers—
Barn Door, Sargent's list. ..... 60&10&10%
Acme Moore's Anti-Friction. 55%
Union Barn Door Roller 70%

Rope.

Manila. ..½ in. and larger	₱ ℔ 11 ¢
Manila. ..⅜ in.	₱ ℔ 11½¢
Manila. ..¼ and 5-16 in.	₱ ℔ 12 ¢
Manila Tarred Rope.	₱ ℔ 10½¢
Manila, Hay Rope.	₱ ℔ 11 ¢
Sisal. ..½ inch and larger	₱ ℔ 7½¢
Sisal. ..⅜ in.	₱ ℔ 8½¢
Sisal. ..¼ and 5-16 in.	₱ ℔ 8½¢
Sisal, Hay Rope.	₱ ℔ 7½¢
Sisal, Tarred Rope.	₱ ℔ 7½¢
Sisal, Medium Lathe Yarn.	₱ ℔ 6½¢
New Zealand. ..½ in. and larger	₱ ℔ 7½¢
New Zealand. ..⅜ inch,	₱ ℔ 7½¢
New Zealand. ¼ and 5-16 inch,	₱ ℔ 8½¢
New Zealand, Hay Rope.	₱ ℔ 7½¢
New Zealand. Tarred Rope.	₱ ℔ 6½¢

Note.—Manufacturers' prices on above ½¢ ₱ ℔ less, f. o. b. factory.

Cotton Rope	₱ ℔ 13½@16¢
Jute Rope	₱ ℔ 6 @6½¢

Wire—
List May 1, 1886.

Iron	32½&2½%
Iron, Galvanized	40&2½%
Cast Steel	40&2½%

Rules—
Boxwood. .....80&10&10@80&10&10&10%
Ivory. ..... 50@50&10%
Starrett's Rules and Straight Edges, Steel. ..... 25&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—The following prices are often cut by jobbers.
Disston's Circular ... . 45@45&5%
Disston's Cross Cuts ..... 45@45&5%
Disston's Hand ..... 20@20&5%
Woodrough & McFarlin.
Hand, Panel and Rip. ..... 25@25&5%
Narrow Champion Cross Cuts with Handles, ₱ foot. ..... 18@20¢
Champion Thin Back Cross Cuts, ₱ foot. ..... 26@28¢
Champion Extra Thin Back Cross Cuts, ₱ foot. ..... 29@32¢
One Man Champion Cross Cuts, ₱ foot. ..... 37@40¢
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip. ..... 3¢@3.5¢%
Narrow Champion Cross Cuts with Handles, ₱ foot. ..... 18@20¢
Champion Thin Back Cross Cuts, ₱ foot. ..... 26@28¢
Champion Extra Thin Back Cross Cuts, ₱ foot. ..... 29@32¢
One Man Champion Cross Cuts, ₱ ft., 37@40
Atkins' Circular Shingle and Heading dis 50%
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 32¢
Atkins' Champion and Electric Tooth X Cuts. ..... ₱ foot 30¢
Atkins' Hollow Back X Cuts. ..₱ foot 20¢
Atkins' Mulay, Mill and Drag. 40%
Atkins' One-Man Saw, with handles, ₱ foot 40¢
Peace Circular and Mill. ..... 45@45&5%
Peace Hand Panel and Rip. ..... 2¢@25&5%
Peace Cross Cuts. ..... 45@45&5%
Richardson's Circular and Mill. 45@45&5%
Richardson's X Cuts. ..... 45@45&5%
Richardson's Hand, &c. ..... 2¢@25&5%
C. E. Jennings & Co., Hand, Panel and Rip ..... 2¢@20&10%

Hack Saws—

Griffin's, complete.....40&10@50%
Griffin's Hack Saw, Blades....40&10@50%
Star Hack Saws and Blades.....25%
Eureka and Crescent.....35%

Scroll—

Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cab. Makers' $15.25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality, ₩ doz $21.00
Hatch, Tea, No. 161....₩ doz $6.75@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10%
Riehle Bros.' Platform.....40%

Scale Beams—See Beams, Scale.

Scissors, Fluting.....45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.50.....30&10%
Box, 1 Handle.....₩ doz $4.00. 10%
Box, 2 Handle.....₩ doz $6.00, 10%
Defiance Box and Ship.....20&10%
Foot.....50&10@6%
Ship, Common.....₩ doz $3.50 net
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—

Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Hand, Grand Rapids, list.....5%
Lag, Blunt Point, list Jan. 1, 1890.75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890.....75@75&10%
Bed.....25&5%
Hand Rail, Sargent's.....60&&10%
Hand Rail, H. & F. Mfg. Co...70&10@75%
Hand Rail, Am. Screw Co.....75%
Jack Screws, Millers Falls list..50@50&5%
Jack Screws, P. S. & W.....35%
Jack Screws, Sargent...60&10@60&10&5%
Jack Screws Stearns'.....40@40&10%

Cork—

Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Howe Bros & Hulbert.....35%

Machine—

Flat Head, Iron.....55%
Round Head, Iron.....50%

Wood—

List January 1, 1891.

Flat Head Iron.....72½% } @ 10% of list given.
Round Head Iron.....67½% }
Flat Head Brass.....72½% }
Round Head Brass.....65 % }
Flat Head Bronze.....72½% }
Round Head Bronze.....65 % }
Rogers' Drive Screws.....83⅓% }

Scroll Saws—See Saws, Scroll.

Scythes.

Grain.....40&5@40&10%
Grass.....40&10@50%

Scythe Snaths—See Snaths, Scythe

Sets.

Awl and Tool.

Aiken's Sets, Awls and Tools, No. 20, ₩ doz $10.00.....55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....25@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12, 2, $18.....25%
Henry's Combination Haft...₩ doz $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50..70&10&5%

Nail—

Square.....₩ gr., $4 00@$4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point...₩ gr.,$12, 20%

Rivet,

Regular list.....50&10%

Saw—

Stillman's Genuine ..₩ doz $5.00@7.75, 40&5%
Stillman's Patte n Hand, ₩ doz $3.25; Cross Cut, 5.2c.....40&10%
Common Sets.....₩ doz $2.00, 45@50%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00, 40&10@50%
Leach's. .No. 0, $3 00; No. 1, $15, 15@20%
Nash's .....20&10@20&10&10
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine.....$13.00, 50&10@60%
Aiken's Imitation.....$7.00, 55&5%
Hart's Pat. Lever.....20%
Disston's Star.....25%
Leopold.....40&10@50%
Atkin's Lever.....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10%
Avery's Saw Set and Punch.....50%
Chieftain Co.'s Superior.....₩ doz $7.00
Chieftain Co.'s Royal.....₩ doz $7.50
Crescent.....₩ doz $3.00

Sharpeners, Knife.

Parkins.

Applewood Handles...₩ doz $6.00, 40%
Rosewood or Cocobolo.₩ doz $900 40%

Shaves, Spoke

Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....35&10%
Goodell's, ₩ doz $9.00.....25%

Shears—

American (Cast) Iron...75&10@75&10&5%
Barnard's Lamp Trimmers...₩ doz $3.75
Tinners'.....20&2%
Seymour's, List, Dec., 1891. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears.....33⅓%
Cast Steel Trimmers:
First quality.....80@80&10%
Second quality.....80&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Chicago Drop Forge & F. Co., Solid Steel Forged.....60%
Davenport Cutlery Co.....60@60&10%
Clauss Shear Co., Japanned.....70%
Clauss Shear Co., Nickeled, same list.60%
Galvanic, 3¼ to 9 in, ₩ doz, $1.00 ₩ inch

Pruning Shears and Hooks.

Disston's Combined Pruning Hook and Saw.....₩ doz $18.00, 20&10%
Disston's Pruning Hook, ₩ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools.....40%
Pruning Shears, Henry's Pat, ₩ doz $3.75@$4.00
Henry's Pruning Shears, ₩ doz $4.25@4.50
Wheeler, M. & C. Co.'s Combination, ₩ doz $12.00, 20%
Dunlap's Saw and Chisel, ₩ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co.....60%

Tinners', &c.—

Shears and Snips (P. S. & W.).....20@25%
Snips, J. Mallinson & Co.....33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888..50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec. 18, 1885.....60&2%
Moore's Anti-Friction.....50%

Sliding Shutter—

R. & E. list Dec. 18, 1885.....60&10&2%
Sargent's list.....60&10%
Reading list.....60&10&10%

Shells—

First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Prize.....40&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%

Shells Loaded—

Standard List, July 19, 1890.....40&10&10@4..&10&10&5%

Ship Tools—

L. & I. J. White.....20&5%

Shoes, Horse, Mule, &c.

Horse—

Burden's, Perkins', Phœnix and Bryden's Boss, at factory.....$4.00
Bryden's Frog Pressure, at factory.$5.00

Mule—

Add $1 ₩ keg to above prices.

Ox, Wrought—

Ton lots.....₩ ℔ 9¢
1000 ℔ lots.....₩ ℔ 9½¢
500 ℔ lots.....₩ ℔ 10¢

Shot—

	Ton lots	Small lots
Drop, up to B, 25-℔ bag	$1.42	$1.47
Drop, up to B, 5-℔ bag	.35	.36
Drop, B and larger, 25-℔ bag	1.67	1.72
Drop, B and larger 5-℔ bag	.40	.41
Buck and Chilled, 25-℔ bag	1.67	1.72
Buck and Chilled, 5-℔ bag	.40	.41
Dust Shot, 25-℔ bag	2.00	2.05
Dust Shot, 5-℔ bag	.45	.46

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....60@60&10%
Griffith's Solid C. S. R. R. Goods.....20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
H. M. Myers Co.....30 %
Payne Pettebone & Son.....33⅓&5%
Remington's (Lowman's Pat.)30&10@40%
Rowland's, Black Iron.....50&10%
Rowland's Steel.....50@50@60&10%

Shovels and Tongs—

Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Sieves—

Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co.....50&25%
Shaker (Barler's Pat.) Flour Sifters.... ₩ doz $2.00; ₩ gr $21.60
Electric.....₩ gr $21.00
A. & W. Sifters.....₩ doz 2.00
Hunter's.....₩ doz $2.00
Smith's Adjustable Sifters.....₩ doz $2.00
Smith's Adjustable Milk Strainer. ₩ doz $2.00
Smith's Adjustable T. & C. Strainer. ₩ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₩ doz..	80¢	$1.00
Mesh 20, Nested, ₩ doz..	95¢	1.10
Mesh 24, Nested, ₩ doz..	$1.15	1.25

Skeins, Thimble—

Western list.....75&5&75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co.....60%
Seneca Falls Pattern.....60%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Slates—

School, by case.....50&10@50&10&10%

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.).....65%
Fitch's (Bristol).....50&10%
Hotchkiss.....10%
Andrews.....50%
Sargent's Patent Guarded.....70&10&10%
German, new list.....40&10%
Covert.....50&10&5&2%
Covert, New Patent.....50&10&5&2%
Covert, New R. E.....60&10&10&5%
Covered Spring.....60&10&10%

Snaths, Scythe.

List.....50%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₩ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list.....70&10%
Buffalo S. S. & Co.....33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).

Meriden Brit. Co., Rogers.....40&15%
C. Rogers & Bros.....40&15%
Rogers & Bro.....40&15%
Reed & Barton.....40@40&5%
Wm. Rogers Mfg. Co.....40, 15&5%
Simpson, Hall, Miller & Co.....40, 15&5%
Holmes & Edwards Silver Co...40, 15&5%
L. Boardman & Son.....50&12½%

Miscellaneous.

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver.....50&10&5%
No. 30 Silver Metal.....50&10&5%
No. 24 German Silver.....50&10&5%
No. 50 Nickel Silver.....50&5%
No. 49 Nickel Silver.....50&10&5%
Wm. Rogers Mfg. Co.
Rogers' Silver Metal.....50, 10&5%
18% Rogers' German Silver.....60&5%
22% Rogers' Nickel Silver. .....50&5%
German Silver.....50@50&5
German Silver, Hall & Elton..50&5% cash
Nickel Silver.....50&5@50&10&5% cash
Britannia.....60@60&5%
Boardman's N'ck'l Silver, list July 1, 1891.....60%&5% cash
Boardman's Britannia Spoons, case lots.....60&5% cash

Springs—

Door.—

Torrey's Rod, 39 in ....₩ doz $1.2(@1.25
Gray's, ₩ gr., $20.00..... 25%
Bee Rod ₩ gr., $20.00.....2(@25%
Warner's No. 1, ₩ doz, $2.50; No. 2, $3.50.....5)@50&5%
Gem (Coil), list April 19, 1886.. 10@15%
Star (Coil), list April 19, 1886...2(@2 &5%
Victor (Coil).....60&10@60&10&5%
Champion (Coil).....60&10@60&10&10%
Cowell's....No. 1, ₩ doz, $18.00; No. 2, $15.00.....5(@50&10%
Rubber, complete, ₩ doz, $4.50...55&10%
Hercules.....5(@50&10%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Halt Scroll.....60&10&10%
Cliff's Bolster Springs.....25%

Squares—

Steel and Iron.....} .80&10@80&10&10%
Nickel-Plated.....}
Try Square and T Bevels...60&10@60&10 &10%
Disston's Try Square and T Bevels.....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares.....40%
Avery's Bevel Protractor 50%

Squeezers.

Fodder.—

Blair's.....₩ doz $2.00
Blair's "Climax".....₩ doz $1.25

Lemon—

Porcelain Lined, No. 1....₩ doz $6.00, 25&20%

Wood, No. 2.....₩ doz $3.00, 35%
Wood, Common.....₩ doz $1.70@1.75
Dunlap's Improved.....₩ doz $3.75, 20%
Sammis....No. 1, $5.00; No. 2, $9; 12, $18 ₩ doz.....25&10%
Jennings' Star.....₩ doz $2.50
The Boss.....₩ doz $2.50
Dean's..Nos. 1, ₩ doz $6.50; 2, $3.35; 3, $1.90; Queen, $2.50
Little Giant.....50@50&5%
King.....40&5%
Hotchkiss Straight Flash....₩ doz $12.00
Silver & Co., Glass .....₩ gro. $9.00
Manny Lemon Juice Extractor: Standard.....₩ doz $0.75@$1 00 Improved.....₩ doz $2.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Blind—

Barbed, ½ in. and larger.....₩ ℔ 7@7½¢
Barbed, ¼ in. .....₩ ℔ 8@8½¢
Fence staples, Galvanized, } Same price
Fence Staples, Plain..... } as B'rb Wire. See Trd. Reg.
Steelyards.....40&10@50%

Stocks and Dies—

Blacksmith's
Waterford Goods.....40@40&10%
Butterfield's Goods.....40@40&10%
Lightning Screw Plate.....25@30%
Reece's New Screw Plates....33½&5@40%
Reversible Ratchet.....30
Gardner.....25%

Stops, Bench.

Morrill's.....₩ doz $9, 50%
Hotchkiss's.....₩ doz $5. 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's .....₩ doz $3.....10%
Cincinnati .....25&10%
Terrell's Nos. 1 and 2, ₩ doz., $3; No. 3, $5.50.....30%

Stone—

Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone.....₩ ℔ 2½¢
Washita Stone, Extra.....₩ ℔ 22@23¢
Washita Stone, No. 1.....₩ ℔ 19@20¢
Washita Stone, No. 2.....₩ ℔ 12@13¢
Washita Slips, No. 1, Extra..₩ ℔ 44@46¢
Washita Slips, No. 1.....₩ ℔ 33@35¢
Arkansas Stone, No. 1, 4 to 6 in₩ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in₩ ℔ $1.85
Turkey Oil Stone, 4 to 8 in.....₩ ℔ 40¢
Turkey Slips.....₩ ℔ $1.00@1.50
Lake Superior, Chase.....₩ ℔ 12¢
Lake Superior Slips, Chase.....₩ ℔ 20¢
Seneca Stone, Red Paper Brand....₩ ℔ 18@20¢
Seneca Stone, High Rounds..₩ ℔ 20@25¢
Seneca Stone, Small Whets..₩ gro $24.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.

Cast Steel, Polished.....₩ doz $2.25
Cast Iron, Steel Points.....₩ doz 80¢
Socket.....₩ doz $1.75
Bullard's.....25@25&10%

Strops, Razor—

Genuine Emerson.....60@60&5%
Imitation " ....₩ doz $2.00, 20&10&5%
Torrey's.....20%
Badger's Belt and Com.....₩ doz $3.00
Lamont Combination.....₩ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89.50%
Electric.....List net

Stuffers or Fillers, Sausage—

Miles' "Challenge," ₩ doz $20, 50@50&5%
Perry .....₩ doz, No. 1, $15.00; No. 0, $21.00.....50&5@50&10%
Draw Cut No. 4, each $30.00.....20%
Enterprise Mfg. Co.....20&10@30%
Silver's.....40&10%

Sweepers, Carpet.

Bissell No. 6.....₩ doz $17.00
Bissell No. 7 New Drop Pan.₩ doz $19.00
Bissell, Grand.....₩ doz $36.00
Grand Rapids.....₩ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic.....₩ doz $15.00
Jewel.....₩ doz $17.00
Improved Parlor Queen, Nickeled..₩ doz $27.00
Japanned..₩ doz $24.00
Excelsior .....₩ doz $22.00
Garland .....₩ doz $18.00
Parlor Queen.....₩ doz $24.00
Housewife's Delight.....₩ doz $15.00
Queen.....₩ doz $16.00
Queen, with band.....₩ doz $18.00
King .....₩ doz $30.00
Weed, Improved.....₩ doz $18.00
Hub.....₩ doz $16.00
Cog-Wheel.....₩ doz $16.00
Easy.....₩ doz $22.00
Monarch.....₩ doz $22.00
Goshen.....₩ doz $21.00
Ladies' Friend.....₩ doz $18.00
Advance .....₩ doz $18.00
Supreme.....₩ doz $22.00

Tacks, Brads, &c.—

List October 19, 1889. Old established standard weights Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued.....75 %
American, Tin'd and Cop'd.77½ %
Steel, Bright and Blued... 72½ %
Steel, Tinned and Coppered 75 %
Swedes Iron, Blued. .....72½ %
Swedes Iron, Tinned.....75 %
American Iron Tacks.....72½ %
Swedes Iron Tacks—
S S., Blued.....75 %
S. S., Tinned.....77½ %
Lanc., Blued.....66⅔ %
Lanc., Tinned.....72½ %
Gimp and Lace Tacks—
S. S., Blued .....75 %
S. S., Tinned.....77½ %
Lanc., Blued .....66⅔ %
Lanc., Tinned.....72½ %
Basket and Trimmers' Tacks—
Lanc .....65 %
S. S.....70 %
Hungarian Nails.....66⅔ %
Miners' Tacks, S. S. .....75 %
Miners' Tacks, Lanc.....70 %
Common and Patent Brads..66⅔ %
Leathered Tacks.....20 %
Brush Tacks.....50 %
Looking Glass Tacks.....50 %
Picture-Frame Points.....50 %
Finishing Nails.....66⅔ %
Trunk and Clout Nails—
Black.....66⅔ %
Tinned or Coppered.....66⅔ %
Basket Nails .....62½ %
Chair Nails.....62½ %
Cigar-Box Nails .....50 %
Tin Capped Nails.....50 %

Regular discount 10&2 %, cash. On many of these goods extra 10@10&10 % is often given.

Miscellaneous—

D'ble-Point, 12½ count85&10@85&10&10%
Wire Carpet Nails .....&0&10%
Plymouth Rock Steel Carpet Tacks..25%
Wire Brads and Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list .....50&10%

Tapes, Measuring—

American.....40@40&5%
Spring.....40%
Chesterman's, Regular list.....35@30%

Thermometers—

Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale—Steel

Standard Wire, list.....50&10@55

Tinners' Shears, &c.—See Shears, Tinners', &c.

Tinware—
Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&25%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.
Coopers'—
Bradley's.....20%
Barton's.....20@20&5%
L. & L. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves, Cincinnati Tool Co.....20%
Lumber.
Ring Peavies, "Blue Line"...₩ doz $20.00
Ring Peavies, Common.....₩ doz $18.00
Steel Socket Peavies.....₩ doz $21.00
Mall. Iron Socket Peavies....₩ doz $19.00
Cant Hooks, "Blue Line"..₩ doz $16.00
Cant Hooks, Common Finish..₩ doz$14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₩ doz $12.00
Hand Spikes....₩ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ dos., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ dos, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ dos, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ dos, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₩ dos $18.00
Saw.
Atkins' Perfection.....₩ dos $12.00
Atkins' Excelsior.....₩ dos $6.00
Atkins' Giant.....₩ dos $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters—See Lifters, Transom.

Traps—
Game—
Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%
Mouse and Rat—
Mouse Wood, Choker, ₩ dos holes, 11@12¢
Mouse, Round Wire.....₩ dos $1.50 10%
Mouse, Cage, Wire.....₩ dos $2.50, 10%
Mouse, Catch-'em-alive....₩ ds $2.50 15%
Mouse, Bonanza.....₩ dos $0.90@$1.00
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ dos., 90¢; in full cases, ₩ dos.....75¢
Hotchkiss Imp. Rat Killer..₩ gro $18.50
Hotchkiss New Rat Killer...₩ gro $16.50
Schuyler's Rat Killer.....₩ gro $15.00

Triers—
Butter and cheese.....25%

Trimmers, Spoke.
Bonney's.....₩ dos $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ dos. 55&10%
Douglas'.....₩ dos $9.00, 20%
Cincinnati.....25%

Trowels—
Lothrop's Brick and Plastering.....20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering.....25%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Trucks, Warehouse, &c.—
B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—
See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ⅓ ℔ Balls	25¢	31¢
No. 12, ¼ and ⅓ ℔ Balls	22¢	30¢
No. 18, ¼ and ⅓ ℔ Balls	20¢	29¢
No. 24, ¼ and ⅓ ℔ Balls	20¢	29¢
No. 36, ¼ and ⅓ ℔ Balls	18¢	28¢

No. 264, Mattrass, ¼ and ⅓ ℔ Balls.62@54¢
Chalk Line, Cotton, ⅓ ℔ Balls.....25¢
Mason Line, Linen, ⅓ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ⅓ ℔ Balls (Spring Twine).....15½¢
3-Ply Hemp, 1 ℔ Balls.....16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls.....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔ ..15¢@16¢
2, 3, 4 and 5-Ply Jute, ⅓ ℔ Balls.....10¢
Wool.....6½¢@6¾¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

Vises—
Solid Box.....50&10@50&10&5%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....30%
Massey Quick Action.....20@25%
Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....66⅔&10%
Hopkins'.....₩ dos $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Miscellaneous.
Combination Hand Vises.....₩ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%
Enterprise Pipe Vises, each.....$3.00
Massey Combination Pipe.....40%

Wads—Price per M.

U.M.C.&W.R.A.—B.E., 11 up...	68¢
U.M.C.&W.R.A.—B.E., 9&10...	82¢
U.M.C.&W.R.A.—B.E., 8.....	96¢
U.M.C.& W.R.A.—B.E., 7.....	$1.10
U.M.C.&W.R.A.—P.E., 11 up..	1.15
U.M.C.&W.R.A.—P.E., 9&10..	1.50
U.M.C.&W.R.A.—P.E., 8.....	1.70
U.M.C.&W.R.A.—P.E., 7.....	1.80
Eley's B. E., 11 up.....	$1.70@$1.75
Eley's P. E., 11@20.....	3.00@ 3.25

Dis.20&2

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.
Cast Iron, Hollow—
Stove Hollow-Ware—
Ground.....60&10%
Unground.....60&10&10%
White Enameled-Ware—
Maslin Kettles.....70&10@70&10&5%
Boilers and Saucepans.....50&10@60%
Tinned Boilers and S'pans....50&10@60%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Enameled—
Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%
Kettles—

Galvanized Tea-Kettles—			
Inch....	6	7	8 9
Each....	55¢	60¢	75¢

Standard Fiber—

	Per Dozen, Plain.	Dec'r'd
Wash-Basins, 10½ in.....	$2.00	$2.25
Wash-Basins, 12 in.....	2.25	2.75
Keelers, 11½ in.....		4.00
Cuspidors.....		8.00
Spittoons, "Daisy," 8 in....	4.00	4.50
Peck Measure.....	4.00	
Half-peck Measure.....	3.50	

See also Pails.
Indurated Fiber—25%
Spittoons, No. 2, ₩ dos.....$8.40
Basins, Ringed, ₩ doz., No. 2....$3.00
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₩ nest.....$7.50
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest.....$2.90
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest.....$1.70
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₩ set.....$1.60
See also *Pails.*
Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.
Reed & Barton..... } 40&5%
Meriden Britannia Co..... }
Simpson, Hall, Miller & Co..... }
Rogers & Brother..... }
Hartford Silver Plate Co..... } 40&5&5%
William Rogers Mfg. Co..... }

Washers—

Size hole.....	5-16	⅜	½	⅝ to 1¾
Washers.....	6	5	3.50¢	3

In lots less than 200 ℔, ₩ ℔, add ½¢, 5-℔ boxes 1¢ to list.

Wedges—
Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 3¾¢

Weights, Sash—
Solid Eyes.....₩ ton $18@$19

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.
8 in., $2.25; 10 in., $2.70; 12 in., $3.2[illegible]

Wire and Wire Goods—
Iron—
Market.
Br. & Ann., Nos. 0 to 18.....77½%
Cop'd, Nos. 0 to 18.....75%
Galv., Nos. 0 to 18.....67½%
Tin'd, Tinned list Nos. 0 to 18.....67½%
Stone,
Br. and Ann'd, Nos. 16 to 18....77½%
Bright and Ann'd, Nos. 19 to 26.....80%
Br. and Ann'd, Nos. 27 to 36.....82½%
Tinned.....
Tinned Broom Wire, 18 to 21, ₩ ℔.....5¢
Galvanized Fence, Nos. 8 and 9.....70%
Brass, list Jan. 18, 1884.....35%
Copper, list Jan. 18, 1884.....35%
Annealed Wire on Spools.....55%
Malin's Steel and Tin'd on Spools.....55%
Malin's Brass and Cop. on Spools....45%
Tate's Spooled, Tinned and Annealed.55%
Tate's Spooled Cop. and Brass.....45%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30...60@70¢ ₩ ℔
Wire Clothes Lines, see Lines.
Wire Picture Cord see cord.
Bright Wire Goods—
Standard list.....30&10%
Wire Cloth and Netting.
Painted Screen Cloth, good quality ₩ 100 sq. ft., $1.40
Galvanized Wire Netting.....70&10&7½%

Wire, Barb.—F.o.b. Cars. Dis. 3 % cash in 10 days.

	Painted.	Galvanized.
Pittsburgh and Cleveland.	$2.55	$3.05
Allentown, Cincinnati and Joliet	2.65	3.15
St. Louis	2.70	3.20
Keokuk	2.75	3.25
Lockport, Baker Perfect..	2.85	3.35
Lawrence and Omaha....	2.90	3.40
San Francisco	3.80	4.30

Wire Rope—See Rope, Wire.

Wrenches—
American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&2½
Coes' "Mechanics".....50&10&3%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'..60&10%
Lamson & Sessions' Standard...70&10%
P. S. & W. Agricultural..... } 75&10@75
Girard Agricultural..... } 10&5%
Lamson & Sessions' Agric'l.. }
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&2½
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....35&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70%
Walker's.....55&2%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—
Am. Wringer Co.'s list, July 15, 91..2% cash
Colby Wringer Co., list Sept. 1, '91.2% cash

Wrought Goods—
Staples, Hooks, &c., list Jan. 12, 1886, 85@85&15%

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	37	@	..
Linseed, City, boiled.....	40	@	..
Linseed, Western, raw.....	35	@	36
Lard, City, Extra Winter..	56	@	..
Lard, City, Prime.....	53	@	54
Lard, City, Extra No. 1.....	42½@		45
Lard, City, No. 1.....	37½@		40
Lard, Western, prime.....	52	@	53
Cotton-seed, Crude, prime.	24	@	25
Cotton-seed, Crude, off grades.....	22	@	23
Cotton-seed, Summer Yellow, prime.....	29	@	30
Cotton-seed, Summer Yellow, off grades.....	27	@	28
Sperm, Crude.....	..	@	70
Sperm, Natural Spring.....	..	@	..
Sperm, Bleached Spring.....	..	@	..
Sperm, Natural Winter.....	73	@	75
Sperm, Bleached Winter....	78	@	80
Whale, Crude.....	..	@	45
Whale, Natural Winter.....	54	@	56
Whale, Bleached Winter....	56	@	58
Whale, Extra Bleached.....	58	@	60
Sea Elephant, Bleached Winter.....	63	@	64
Menhaden, Crude, Sound...	..	@	30
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed..	34	@	35
Menhaden, Bleached W'ter.	36	@	37
Menhaden, Extra Bleached	38	@	39
Tallow, City, prime.....	..	@	43
Tallow, Western, prime....	..	@	..
Cocoanut, Ceylon.....	6	@	6¼
Cocoanut, Cochin.....	7	@	7¼
Cod, Domestic.....	36	@	38
Cod, Foreign.....	..	@	..
Red Elaine.....	34	@	36
Red Saponified..... ₩ ℔	5	@	6¼
Bank.....per gal	..	@	33
Straits.....	..	@	34
Olive, Italian, bbls.....	62	@	65
Neatsfoot, prime.....	55	@	65
Palm, prime, Lagos....₩ ℔	6	@	6¼

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test.....per gal	7½@		8
Black, 29 gravity, 15 cold test.....	8½@		9
Black, 29 gravity, summer.	6½@		7
Cylinder light, filtered	15	@	20
Cylinder, dark, filtered	12	@	15
Cylinder, dard, st'm refined	10	@	18
Paraffine, 23½ @ 24 gravity.	13½@		14
Paraffine, 25 gravity.....	12½@		13
Paraffine, 28 gravity.....	9½@		10
Paraffine, red, 21 @ 22 gr'ty	..	@	..
Paraffine, red, 23½@23 gr'ty	13	@	14

Paints and Colors.

Barytes, Foreign, ₩ ton.	$22.00	@	24.00
Barytes, Amer. floated...	30.00	@	32.00
Barytes, Amer. No. 1....	19.00	@	20.00
Barytes, Amer. No. 2....	13.00	@	16.00
Barytes, Amer., No. 3....	11.00	@	12.00
Blue, Celestial..... ₩ ℔	6	@	8
Blue, Chinese.....	50	@	55
Blue Prussian.....	25	@	40
Blue, Ultramarine.....	8	@	25
Brown, Spanish.....	½@		1
Brown, Vandyke, Amer..	3	@	3½
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk.	3.10	@	..
Carmine, No. 40, in boxes or barrels.....	3.20	@	..
Carmine, No. 40, in ounce bottles.....	4.20	@	..
Chalk, in bulk.... ₩ ton.	1.75	@	..
Chalk, in bbls..₩ 100 ℔.	33	@	40
China Clay, English.....	₩ ton.	13.00	@ 18.00
Cobalt Oxide, prep'd....	2.90	@	....
Cobalt Oxide, black..... lots 100 ℔	2.60	@	....
Cobalt, Oxide, black..... less 100 ℔	2.65	@	....
Green, Paris, in bulk.....	14	@	15½
Green Paris, 170 @ 175 ℔ kegs.....	14½@		15½
Green, Paris, small pack.	16	@	21½
Green, Chrome, ordinary	8	@	11
Green, Chrome, pure....	22	@	25
Lead, Eng., B.B. white....	8½@		10
Lead, Amn. White, dry or in oil: Kegs, lots less than 500 ℔....		@	7½
Kegs, lots 500 ℔ to 5 tons....		@	7
Kegs, lots 5 tons to 12 tons..		@	6¾
Kegs, lots 12 tons and over..		@	6½
Lead White in oil 25 ℔ tin pails add to keg price.....		@	¼
Lead, White, in oil, 12½ ℔ tin pails, add to keg price....		@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.		@	2½
Lead, Red, bbls. and ½ bbls....	6½	@	7¼
Lead, Red, kegs.....	6¾	@	7½
Litharge, kegs.....	6¾	@	7½
Litharge, bbls. and ½ bbls.....	6½	@	7¼

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2¼ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	@	1½
Ocher, French Washed.....	1½@		2½
Ocher, German Washed...	1½@		3
Ocher, American.....	½@		1½
Orange Mineral, English...	9	@	9½
Orange Mineral, French....	10	@	10½
Orange Mineral, German ..	9½@		10
Orange Mineral, American.	8	@	8½
Paris White, English Cliff stone.....	1.00	@	1.15
Paris White, American.....	70	@	75
Red, Indian, English.....	5½@		7
Red, Indian, American....	2	@	6½
Red, Turkey.....	9	@	14
Red, Tuscan.....	9	@	11
Red, Venetian, American.. ₩ 100 ℔.	1.00	@	1.25
Red, Venetian, English....	1.00	@	1.50
Sienna, Italian, Burnt and Powd.₩ ℔	5	@	6½
Sienna, Ital., Burnt Lumps	1½@		3½
Sienna, Ital., Raw, Powd..	5	@	6½
Sienna, Ital., Raw Lumps..	2	@	3½
Sienna, American, Raw....	1½@		1¾
Sienna, American, Burnt and Powdered.....	1½@		1¾
Talc, French.....	1½@		1¾
Talc, American.....	1	@	1¼
Terra Alba, Fr'ch. ₩ 100 ℔	20	@	1.00
Terra Alba, English	50	@	60
Terra Alba, American No. 1	70	@	75
Terra Alba, American No. 2	40	@	50
Umber, Turkey, Bnt. and Powd..... ₩ ℔	3½@		4
Umber, Turkey Bnt. Ln	2½@		3
Umber, Turkey, Raw and Powdered.....	3½@		
Umber, Turkey, R'w Lmps	2½@		2¾
Umber, Turkey, Bnt. Amer.	1½@		1¾
Umber, Turkey, R'w Amer.	1½@		1¾
Yellow, Chrome.....	10	@	25
Vermilion Americ. Lead..	11½@		17
Vermilion, Quicks'er, bulk.	64	@	66
Vermilion, Quicks'er, bags.	65	@	67
Vermilion Quicksilver, smaller pkgs.....	69	@	71
Vermilion English Import	80	@	85
Vermilion, Imitation, Eng.	8	@	25
Vermilion, Trieste.....	87½@		90
Vermilion, Chinese.....	90	@	95
Whiting, Common. ₩ 100 ℔	40	@	45
Whiting, Gilders'.....	50	@	55
Zinc, American, dry....₩ ℔	4½@		5
Zinc, French, Red Seal....	..	@	8¼
Zinc, French, Green Seal..	..	@	8¼
Zinc, French, V. M. X.....	..	@	7
Zinc, Antwerp, Red Seal...	..	@	7¼
Zinc, Antwerp, Green Seal	..	@	8¼
Zinc, German, L. Z. O....	..	@	6¾
Zinc, V M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10¾@		11¼
lots less than 1 ton	11	@	11¾
Zinc, V. M. in Poppy Oil, Red Seal,.....	..	@	..
lots of 1 ton and over....	10	@	10¼
Lots of less than 1 ton....	10¼@		10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1 %; 25 bbls. 2 %, 50 bbls. 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese.....₩ ℔	35	@	40
Blue, Prussian.....	20	@	45
Blue, Ultramar.ine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chrome.....	8	@	13
Green. Paris.....	16	@	18½
Sienna, Raw.....	7	@	14
Sienna, Burnt.....	7	@	14
Umber Raw.....	7	@	10
Umber, Burnt	7	@	10

Putty.

In barrels and ½ bbls....	1.35	@	1.45
In tubs.....	.01½@		.01¾
In tin cans.....	.01½@		.02¼
In bladders.....	.01¾@		.02¼

Spirits Turpentine.

In barrels.....	35½@		..
In machine bbls.....	36	@	..

Glue.

Low Grade.....₩ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	22
English.....	10	@	15
Irish.....	12	@	..

CURRENT METAL PRICES.

DECEMBER 2, 1891.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
¾ to 2 in. round and square..	₩ lb 1.90 @ 2.00¢
1 to 6 in. x ⅝ to 1 in..	
Refined Iron:	
¾ to 2 in. round and square.	
1 to 4 in. x ⅝ to 1½ in..	₩ lb 2.00 @ 2.20¢
4½ to 6 in. x ⅝ to 1 in.	
1 to 6 in. x ¼ and 5-16	₩ lb 2.20 @ 2.40¢
Rods—⅝ and 11-16 round and sq.	₩ lb 2.10 @ 2.30¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.50 @ 2.50¢
"Burden Best" Iron, base price.	₩ lb 3.00¢
Burden's "H. B. & S." Iron, base price	₩ lb 2.80¢
"Ulster"	₩ lb 3.00¢
Norway Bars	8.75 @ 4.00¢
Norway Shapes	4.50 @ 5.00¢

Merchant Steel from Store.

	Per pound
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2¾¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16	₩ lb 2.75 @ 3.00¢	3.35 @	¢
17 to 20	₩ lb 3.00 @ 3.25¢	3.35 @	3.75 ¢
21 to 24	₩ lb 3.35 @ 3.35¢	3.60 @	¢
25 and 26	₩ lb 3.35 @	3.60 @	¢
27	₩ lb 3 50 @ 3.62½¢	3.85 @	¢
28	₩ lb 3.65 @ ¢	4.10 @	¢
	B. B.	2d qual.	
Galv'd, 14 to 20,	₩ lb, 4.75 @	4.60 @	¢
Galv'd, 21 to 24,	₩ lb, 5.12 @	5.00 @	¢
Galv'd, 25 to 26,	₩ lb, 5.50 @	5.35 @	¢
Galv'd, 27	₩ lb, 5.90 @	5.70 @	¢
Galv'd, 28	₩ lb, 6.25 @	6.10 @	¢
Patent Planished	₩ lb A 10¢	B, 9¢	
Russia	₩ lb 10½¢ @ 11¢		
American Cold Rolled B. B.	₩ lb 5¢ @ 7¢		
Craig Polished Sheet Steel	₩ lb, 8½¢		

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged. Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " "Titanic"	₩ lb 20 ¢

METALS.

Tin.

	Per lb
Banca, Pigs	22½¢
Straits, Pigs	22 ¢
Straits in Bars	24 ¢

Tin Plates.

					Charcoal Plates.—Bright.		Per box.
Melyn Grade		IC,	10	x 14		@	$6.75
"	"	IC,	12	x 12		@	7.00
"	"	IC,	14	x 20		@	6.75
"	"	IC,	20	x 28		@	13.70
"	"	IX,	10	x 14		@	8.25
"	"	IX,	12	x 12		@	8.50
"	"	IX,	14	x 20		@	8.25
"	"	IX,	20	x 28		@	16.50
"	"	DC,	12½	x 17		@	6.25
"	"	DX,	12½	x 17		@	7.75
Calland Grade		IC,	10	x 14		@	6.70
"	"	IC,	12	x 12		@	6.95
"	"	IC,	14	x 20		@	6.60
"	"	IX,	10	x 14		@	7.85
"	"	IX,	12	x 12		@	8.20
"	"	IX,	14	x 20		@	7.85
Allaway Grade		IC,	10	x 14		@	6.35
"	"	IC,	12	x 12		@	6.50
"	"	IC,	14	x 20		@	6.35
"	"	IC,	20	x 28		@	12.40
"	"	IX,	10	x 14		@	7.50
"	"	IX,	12	x 12		@	7.80
"	"	IX,	14	x 20		@	7.50
"	"	IX,	20	x 28		@	15.00
"	"	DC,	12½	x 17		@	6.80
"	"	DX,	12½	x 17	6.00	@	7.00

Coke Plates.—Bright.

Steel Coke.—IC,	10 x 14, 14 x 20	@	$5.70
	10 x 20	@	8.10
	20 x 28	@	11 70
	IX, 10 x 14, 14 x 20	@	6.60
BV Grade.—IC,	10 x 14, 14 x 20	@	5.70

Charcoal Plates.—Terne.

Dean Grade.—IC,	14 x 20	@	$5.75
	20 x 28	@	10.75
	IX, 14 x 20	@	6.87½
	20 x 28	@	12.78
Abecarne Grade.—IC,	14 x 20	@	5 50
	20 x 28	@	10 75
	IX 14 x 20	@	6 50
	20 x 28	@	12 60

Tin Boiler Plates.

IXX, 14 x 20	112 sheets @ $13.50
IXX, 14 x 28	112 sheets @ 13.75
IXX, 14 x 31	112 sheets @ 15.25

Copper.

DUTY: Pig, Bar and Ingot, 1½¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot

Lake	@ 12 ¢
Ansonia Grade Arizona	@ 11½¢
Ansonia Grade Casting	@ 11 ¢

Sheet and Bolt

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1890. Subject to a discount of 10 % @ 20 %, according to size of order.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	64 to 32 oz.	32 to 16 oz.	16 to 14 oz.	14 to 12 oz.	12 to 10 oz.	10 to 8 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30
30		72	22	22	22	23	25	27	31	
36	96		22	22	22	24	26	30	33	
36		96	22	22	23	25	27	31	35	
48	96		22	22	24	26	28	32		
48		96	22	22	25	27	29	33		
60	96		22	22	25	27	29	34		
60		96	23	23	26					
84	96		23	24						
84		96	24	25						
Over 84 in. wide			25	27						

All Bath Tub Sheets	16 oz.	14 oz.	12 oz.	10 oz.
Per pound	$0.27	0.29	0 31	0.35

Bolt Copper, ¾ inch diameter and over, per pound 22¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Copper Bottoms, Pits and Flats.

	Per pound
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

— % discount.

Tinning.

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢

For tinning both sides double the above prices.

Planished Brass and Copper.

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ lb
14 oz.	25¢ ₩ lb
12 oz.	27¢ ₩ lb

Seamless Brass and Copper Tubes.

Net.

Sept. 16, 1891.

O. G.	N. G.	⅛	¼	⅜	½	⅝	¾	1	1¼
8-14	6-12	35	31	28	27	26	25	25	22
15	13	36	31	29	28	27	26	23	
16	14	37	32	30	29	28	27	23	
17	15	38	33	31	28	29	28	24	
18	16	40	34	32	30	29	28	25	
19	17	41	35	33	32	31	30	27	
20	18-19	42	37	36	34	33	32	29	
21	20	44	39	37	36	35	34	32	
22	21	46	40	39	37	36	35	34	
23	22	48	42	40	39	38	37	37	
24	23	51	44	42	41	39	38	39	
25	24	54	47	44	43	42	41	43	

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	1.50
Fancy Tubing, Brass, to No. 20, inclusive	45¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list	30 @ — %

Roll and Sheet Brass.

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 / 10	in. 10 / 12	in. 12 / 14	in. 14 / 16	in. 16 / 18	in. 18 / 20	in. 20 / 22	in. 22 / 24
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28	.23	.24	.25	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24 / 26	in. 26 / 28	in. 28 / 30	in. 30 / 32	in. 32 / 34	in. 34 / 36	in. 36 / 38	in. 38 / 40
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.66
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.65	.75

Discount from List 10 % to 25 %.

Brass and Copper Wire.

List January 17, 1884

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0 26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 " " 20	.24	.26	.28	.32
No. 21, or 0.032 diam	.25	.27	.29	.36

Discount 10 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Soft & high brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0 26	$0.28	$0 30	$0 34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.62
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.95
No. 35	.70	.72	.74	1.30
No. 36	.76	.78	.80	1.50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.30	1.32	1.34	2.00
No. 39	2.00	2.02	2.00	3.25
No. 40	2.60	2.62	2.60	5.75

— % discount.

Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs.

Per lb.		Per lb.	
No. 5	49¢	No. 11	56¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No. 15	70¢
No 10	54¢		

60 % @ 10 % discount.

Tobin Bronze—Rods.

¼ inch and larger 17¢ ₩ lb, net

Tobin Bronze—Piston Rods.

1½ inch and smaller	18¢ ₩ lb, net
Over 1½ inch	20¢ ₩ lb, net

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	6¢
Bertha (pure)	8¼¢ @ 9 ¢

Zinc.

Duty; Sheet, 2½¢ ₩ lb.

600 lb casks	7¼¢
Per lb	7¾¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and sheets, 2½¢ ₩ lb.

American	4¾¢
Bar	5¼¢
Pipe, subject to trade discount	6½¢
Tin-Lined Pipe, subject to trade discount	10 %
Block Tin Pipes, subject to trade discount	37½ %
Sheet, subject to trade discount	7¼¢

Solder.

½ @ ½ (Guaranteed)	14½¢
No. 1	12¢
Extra Wiping	11¾¢ @ 13¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson	₩ lb 16 @ 1 6½¢
Hallett's	" @ 13½¢

ALUMINUM.

Prices Per Ton.

Over 98 % pure	₩ lb .75
94 % @ 98 % pure	₩ lb .65

Old Metals.

Prices Paid in New York.

Heavy Copper	₩ lb 10 ¢
Light Copper	₩ lb 9 ¢
Heavy Brass	₩ lb 7 ¢
Light Brass	₩ lb 6 ¢
Lead	₩ lb 3¼¢
Tea Lead	₩ lb 3½¢
Zinc	₩ lb 2¾¢
No. 1 Pewter	₩ lb 14 ¢
No. 2 Pewter	₩ lb 7 ¢
Wrought Scrap Iron	₩ gross ton $17.00
Heavy Cast Scrap	₩ gross ton 10.00
Stove Plate Scrap	₩ gross ton 7.00
Burnt Iron	₩ gross ton 5.00